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Canadian Monetary Policy Outlook 2023-2024



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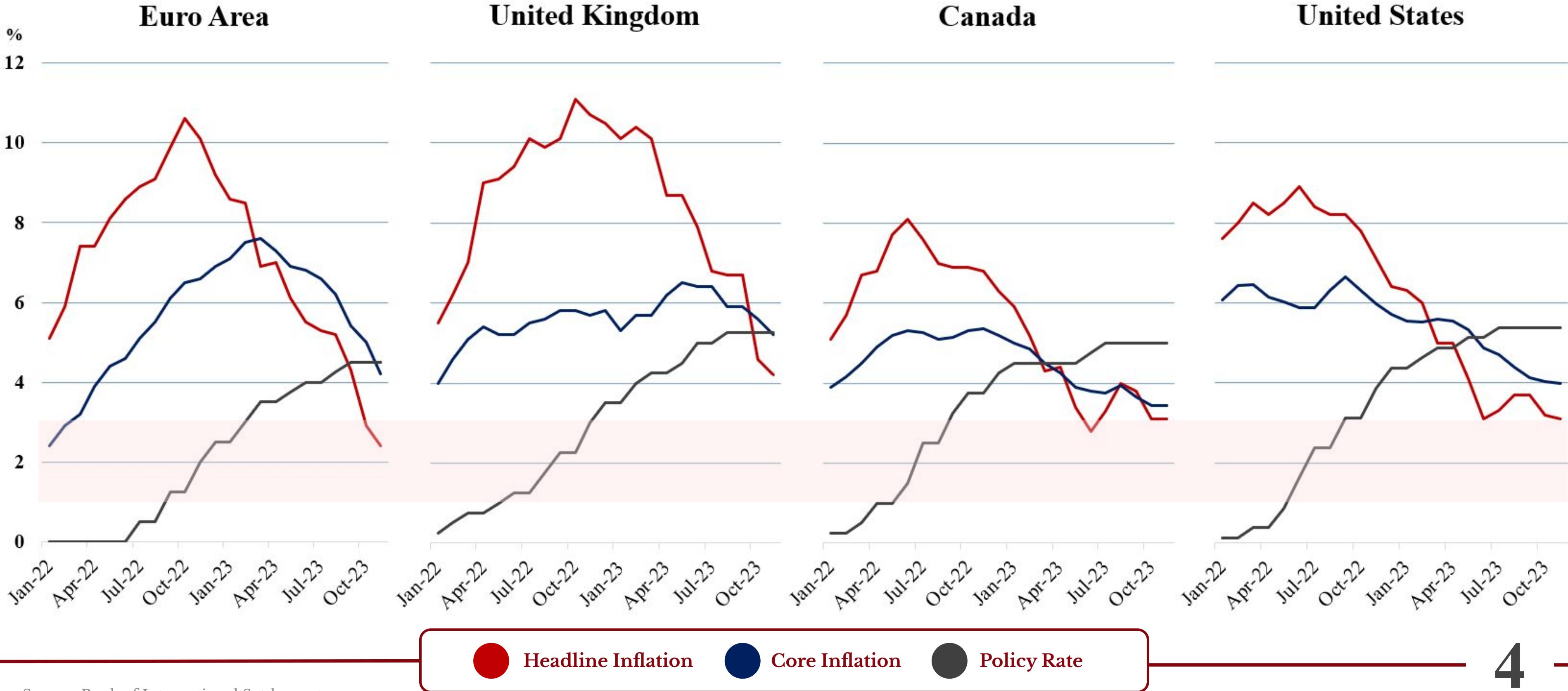


Risk Scenarios

01.

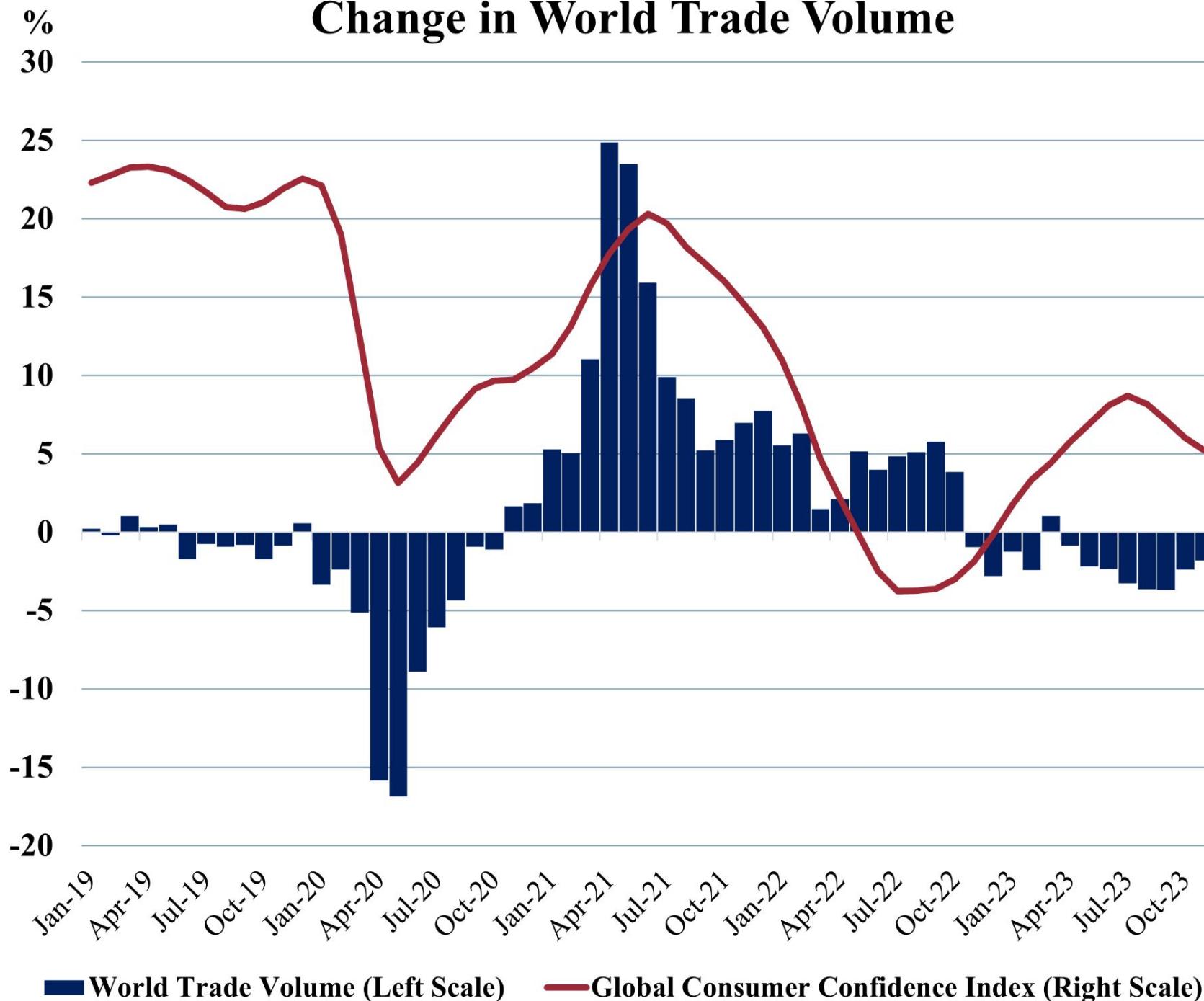
Global Economic Trends

Sustained Period of Tight Monetary Policy as Inflation Remains Stubbornly High

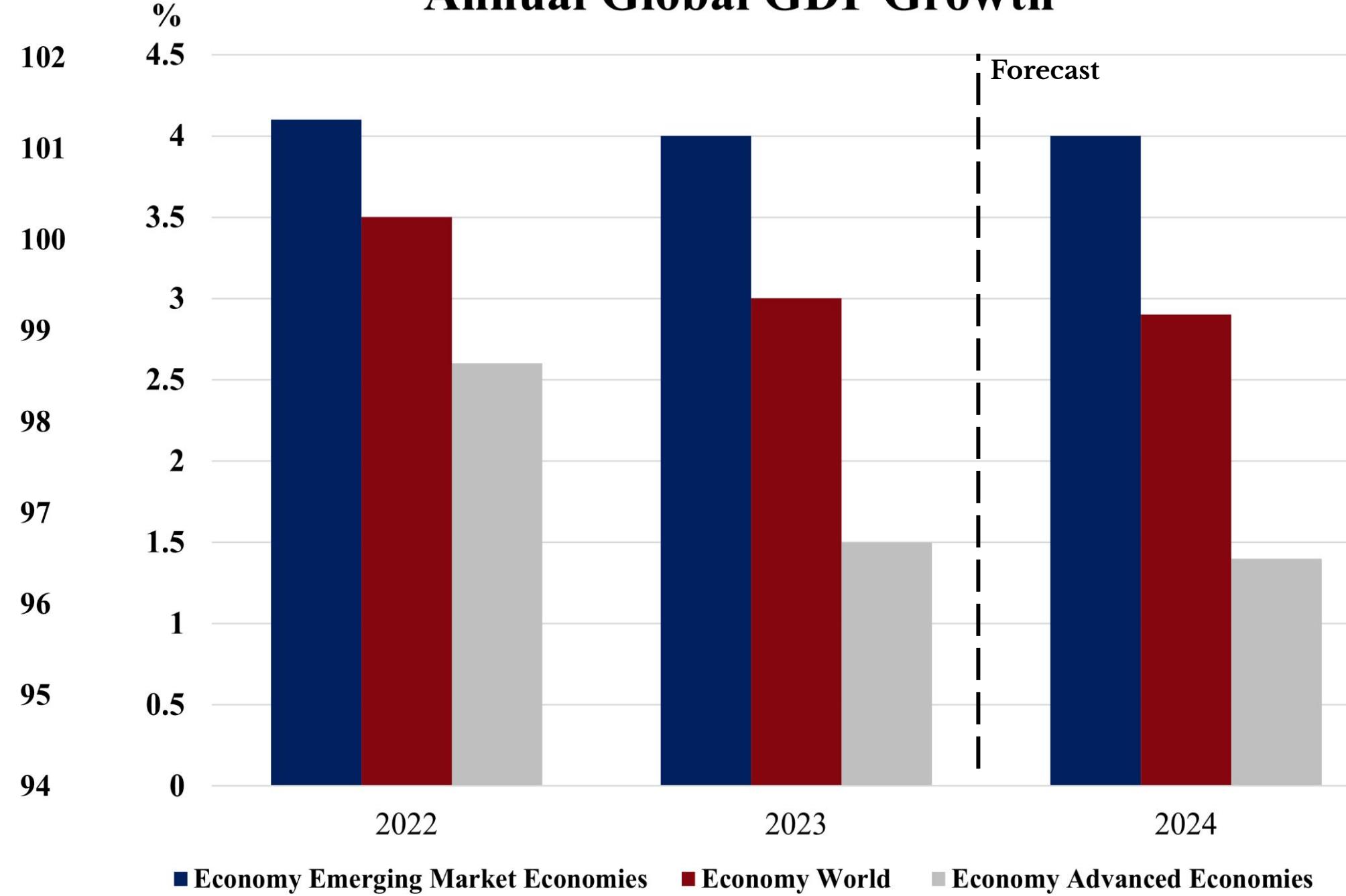


Global Economic Activity and Consumer Confidence Fall During Period of Tight Monetary Policy

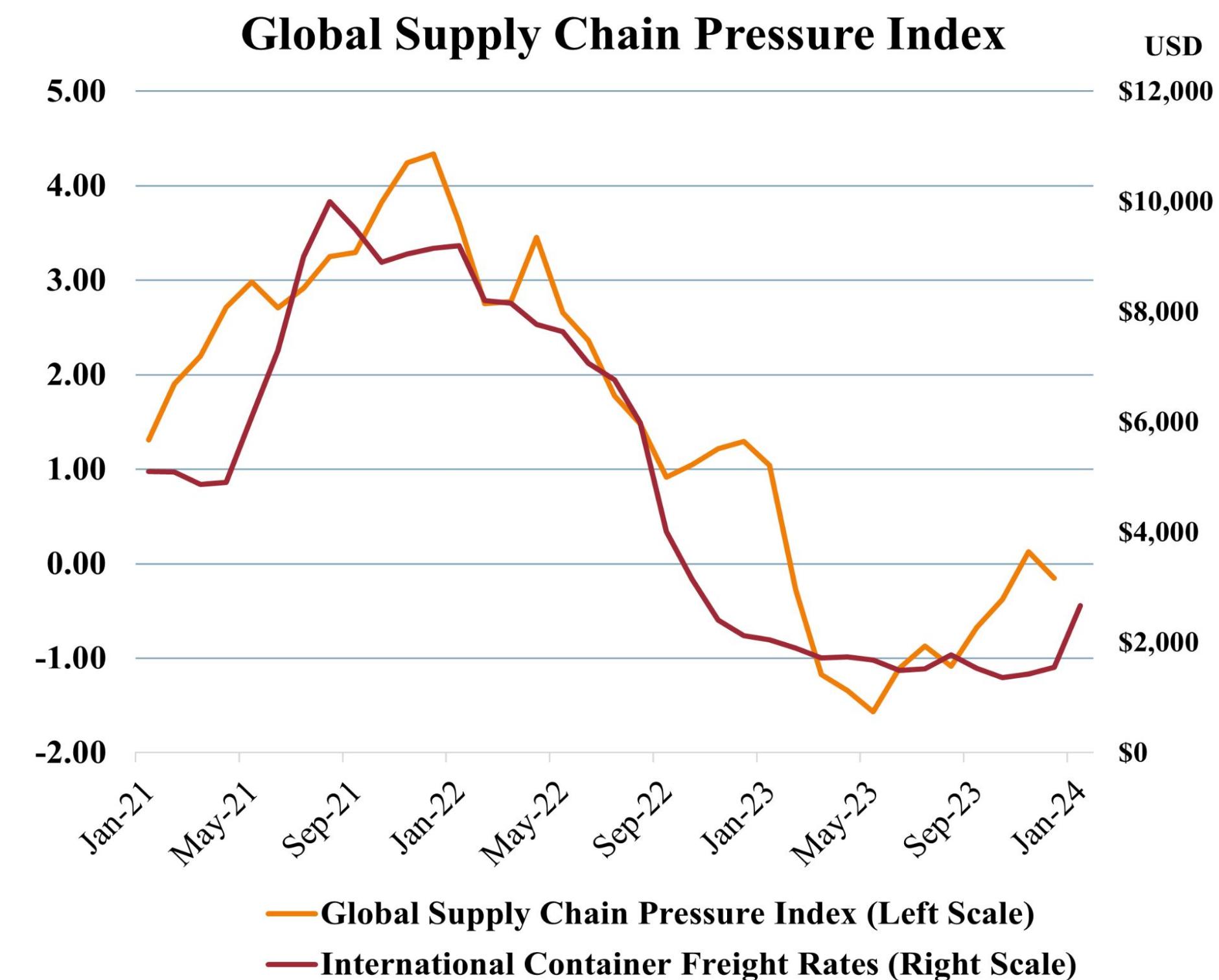
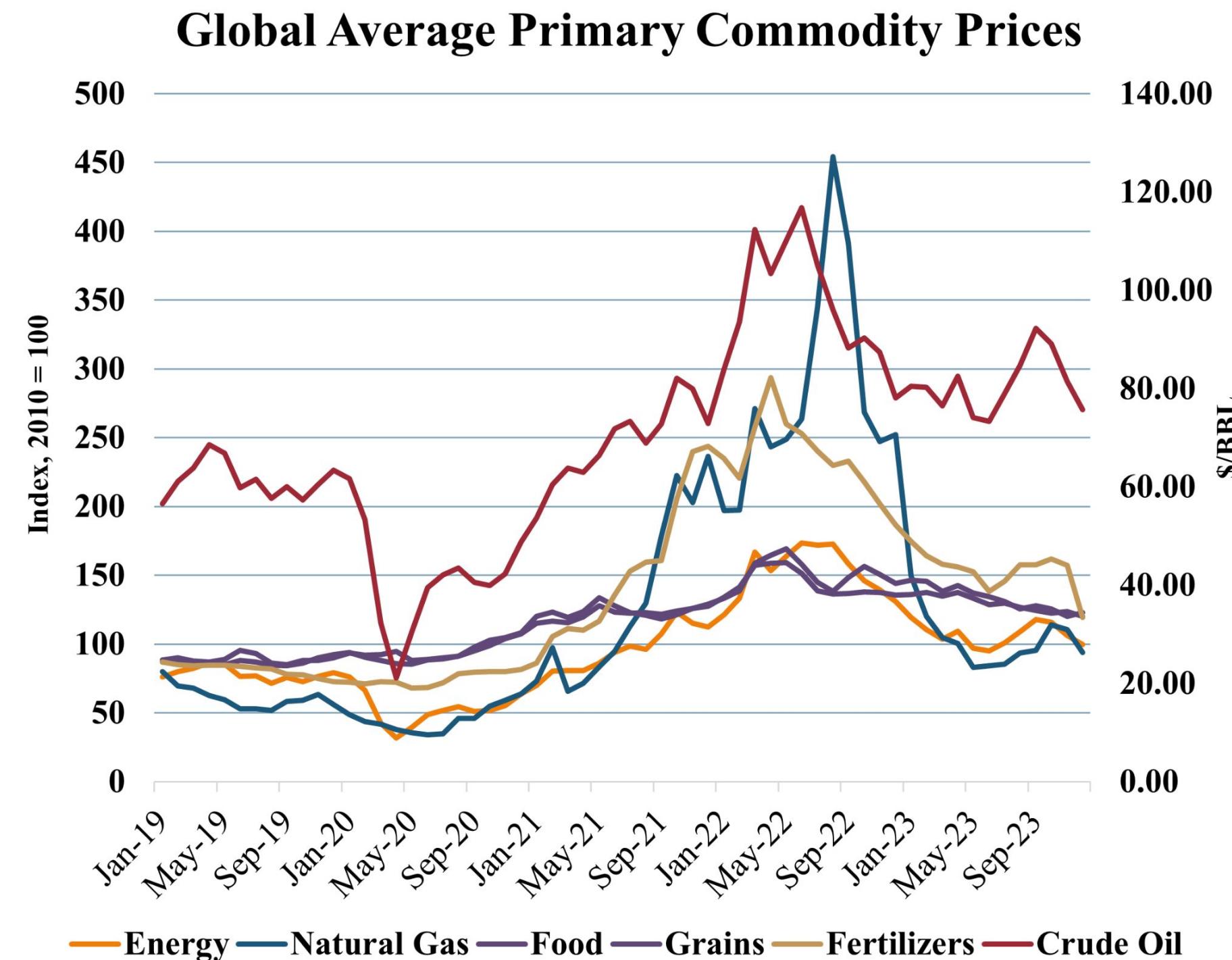
Global Consumer Confidence Index and Y-O-Y Change in World Trade Volume



Annual Global GDP Growth



Global Commodity Prices Decline and Supply Chain Pressures Ease

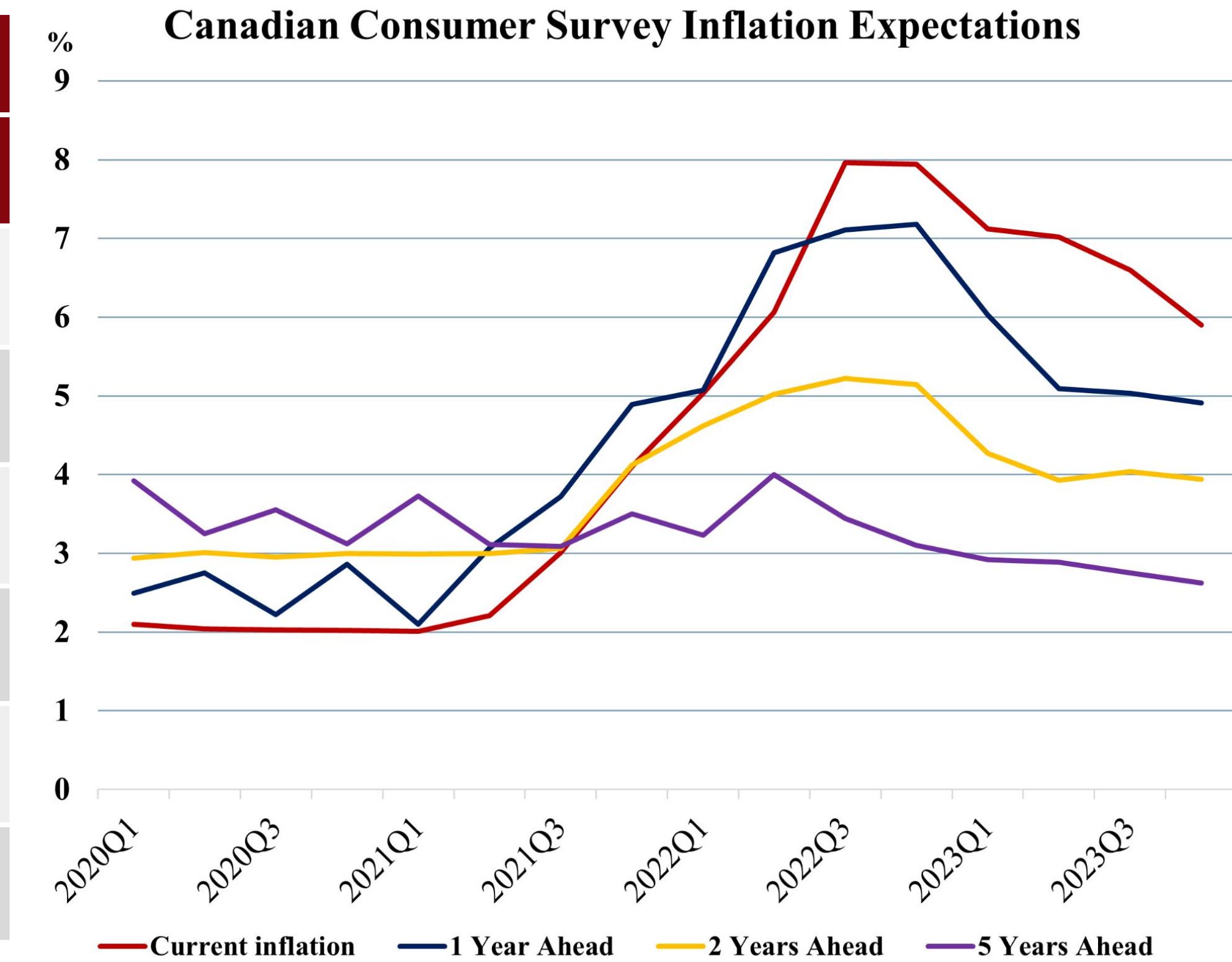


02.

State of the Canadian Economy

Persistent Inflation Drives Consumer Expectations Post-Pandemic

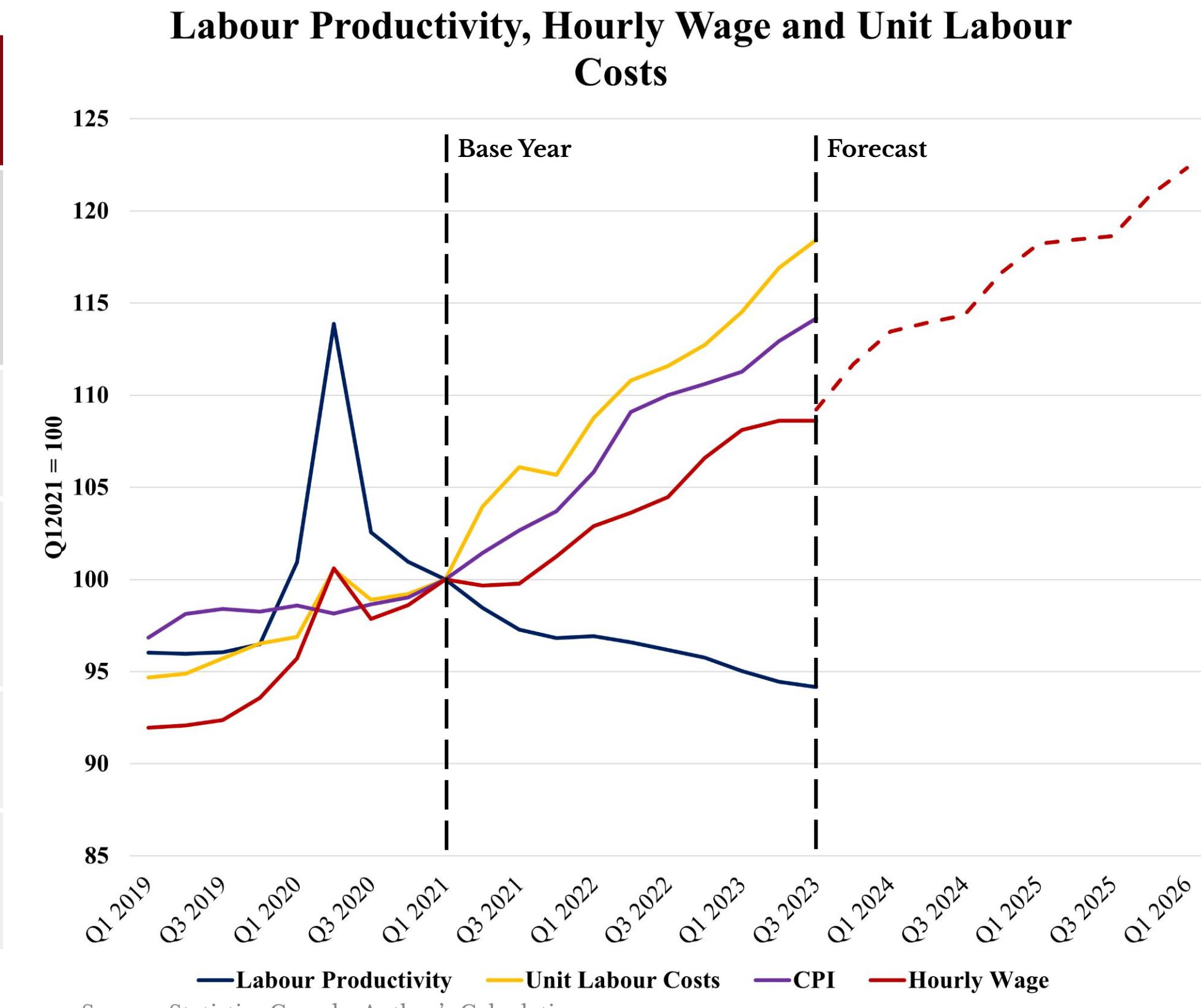
Component	Time	Correlation Coefficient		
		1-year ahead	2-years ahead	5-years ahead
Food	Pre Pandemic	0.035	0.046	-0.025
	Post Pandemic	0.943**	0.897**	-0.088
Shelter	Pre Pandemic	0.317	0.146	-0.110
	Post Pandemic	0.918**	0.871**	-0.086
Energy	Pre Pandemic	0.332	0.342	0.195
	Post Pandemic	0.086	0.188	0.682



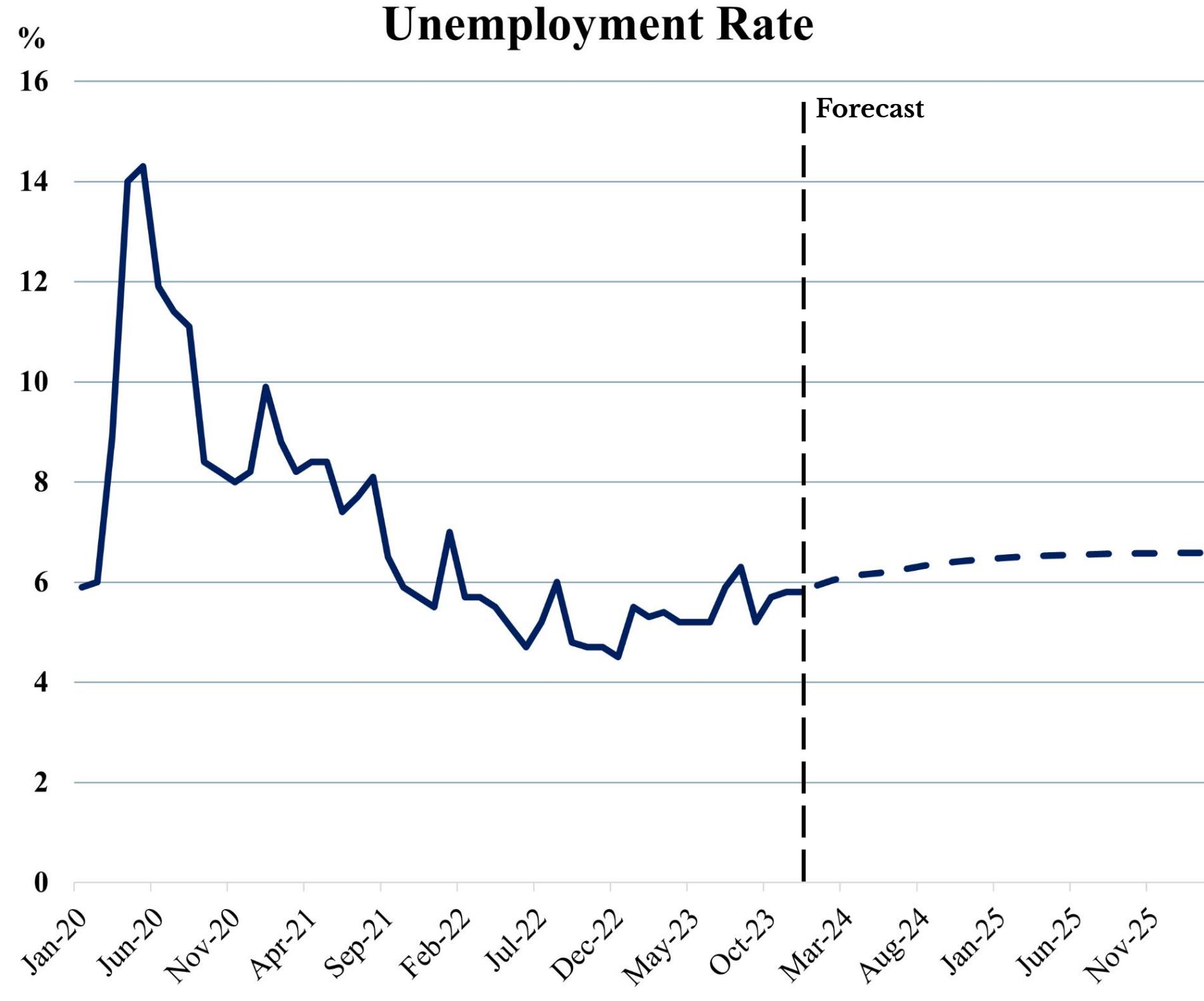
High-Inflation Expectations Impact Wage Price Dynamics

Union Wage Negotiations			
Union Name	Wage Increase Over 3 Years	Status	Motivation
Front Commun	11.4%	Secured	High Inflation
Unifor	12.6%	Secured	High Inflation and Tight Labour Market
PSAC	15%	Secured	High Inflation
FIQ	12%	In Negotiation	High Inflation

Source: Unifor PSAC, Front Commun, FIQ;

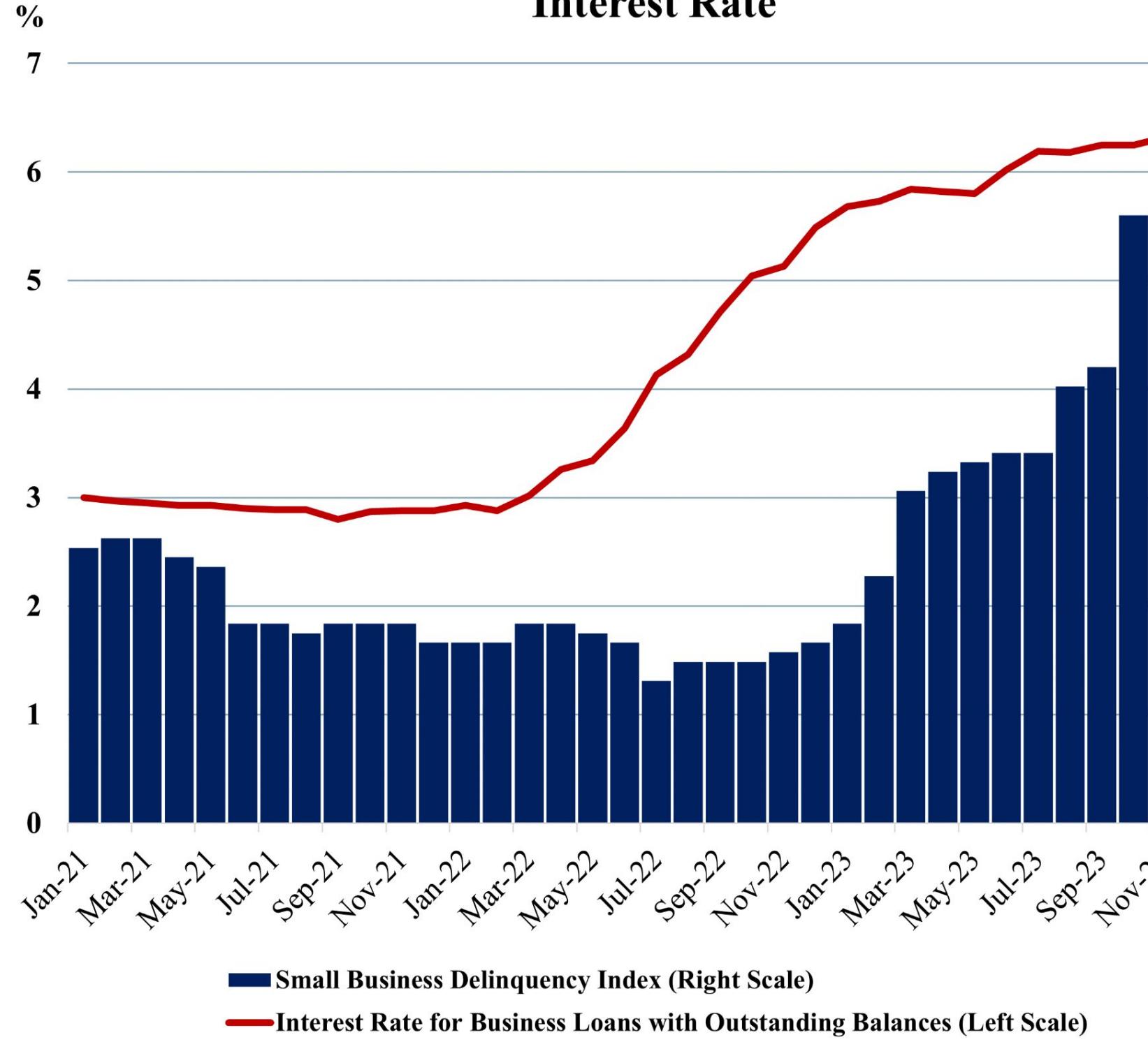


Labour Market Tightness Gradually Easing

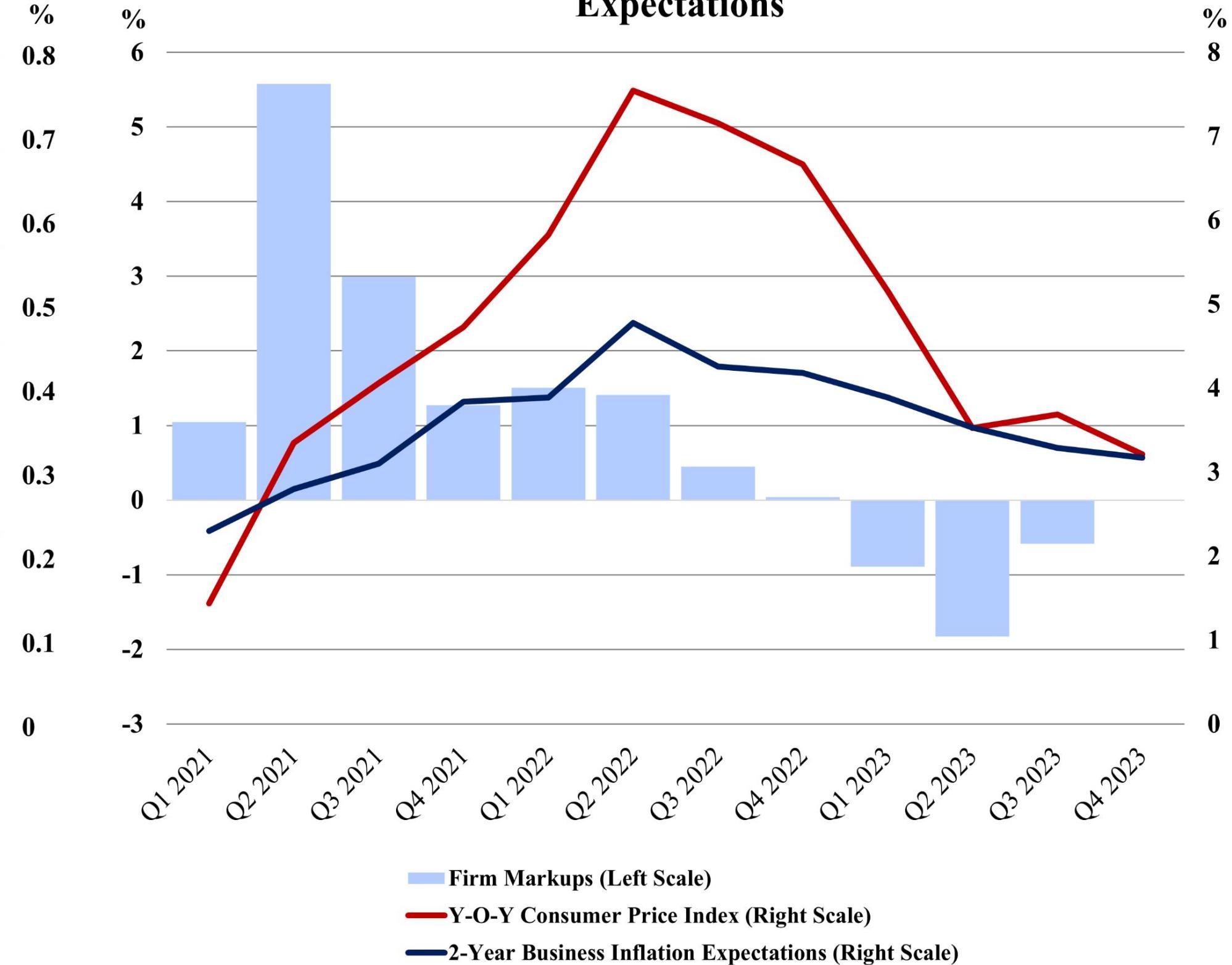


Firm Pricing Behaviour Continues to Normalize as Businesses Adjust to High Interest Rates

Small Business Delinquency Index and Business Loan Interest Rate



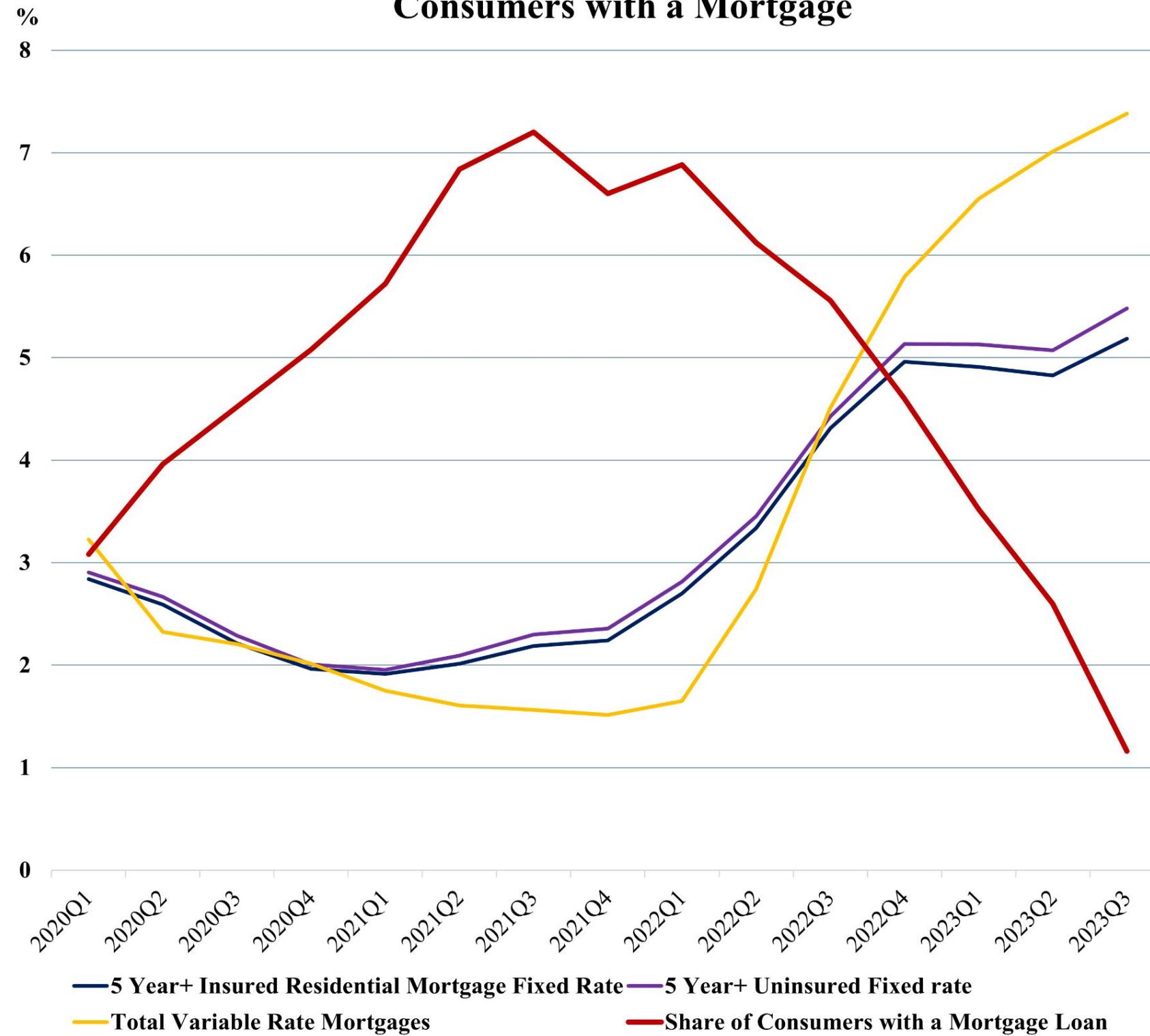
Firms Markups, Inflation and Business Inflation Expectations



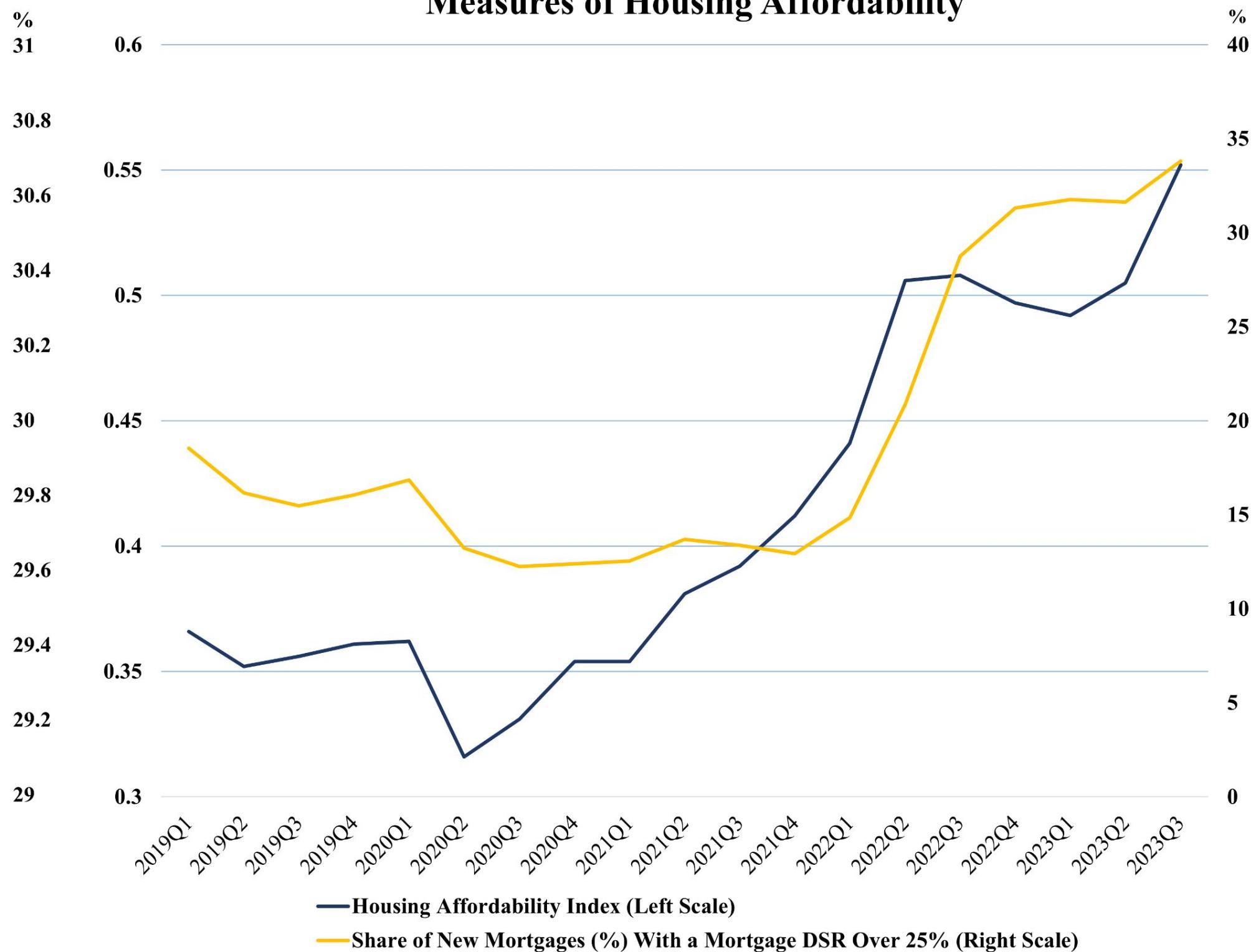
Left Source: Bank of Canada, PayNet Equifax; Right Source: Statistics Canada

High Borrowing Costs Raise Household Debt and Reduce Housing Affordability

Fixed and Variable Mortgage Rates and Percentage of Consumers with a Mortgage

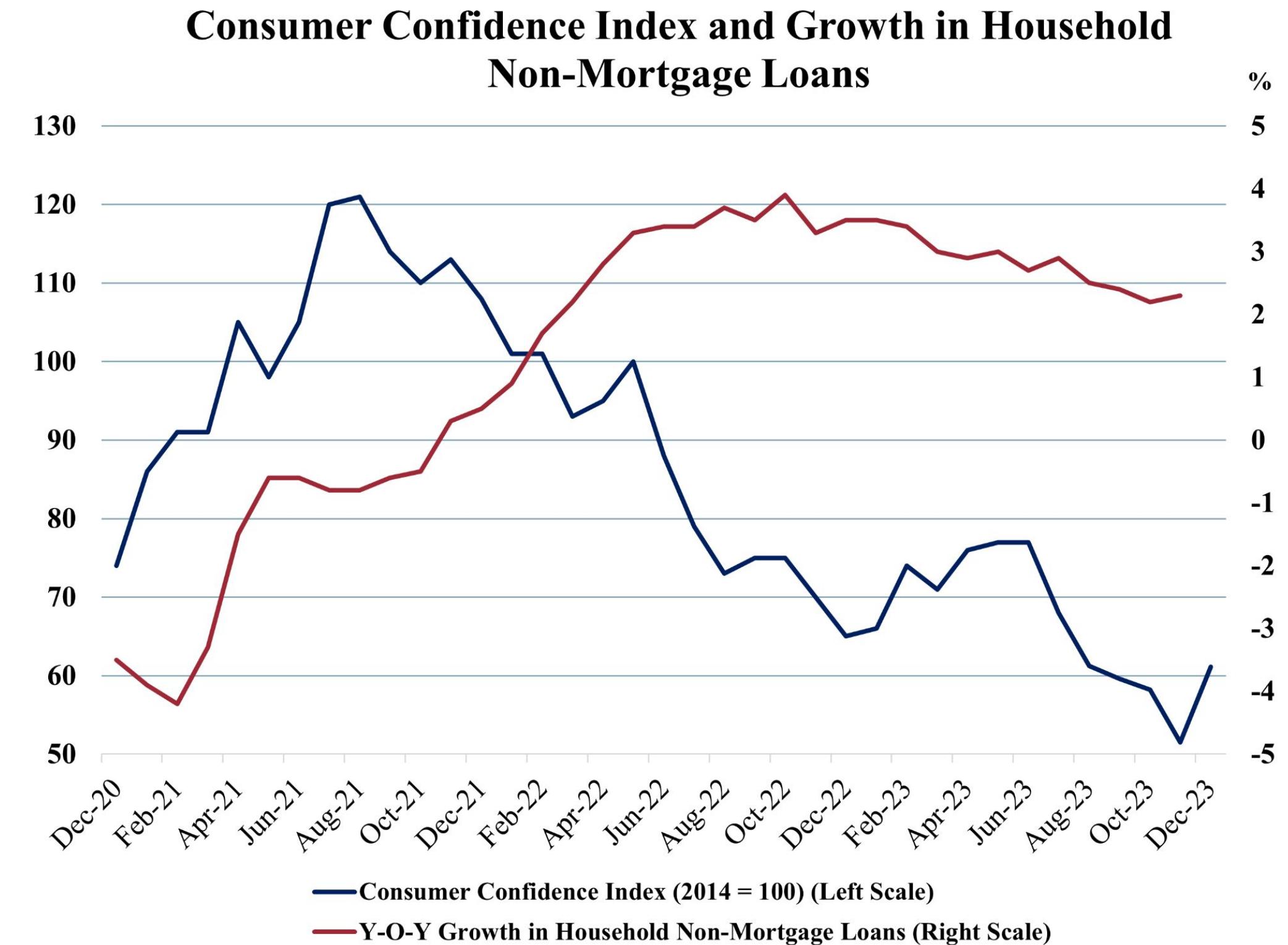


Measures of Housing Affordability



Consumer Confidence Drops Amid Sharply Rising Credit Demand

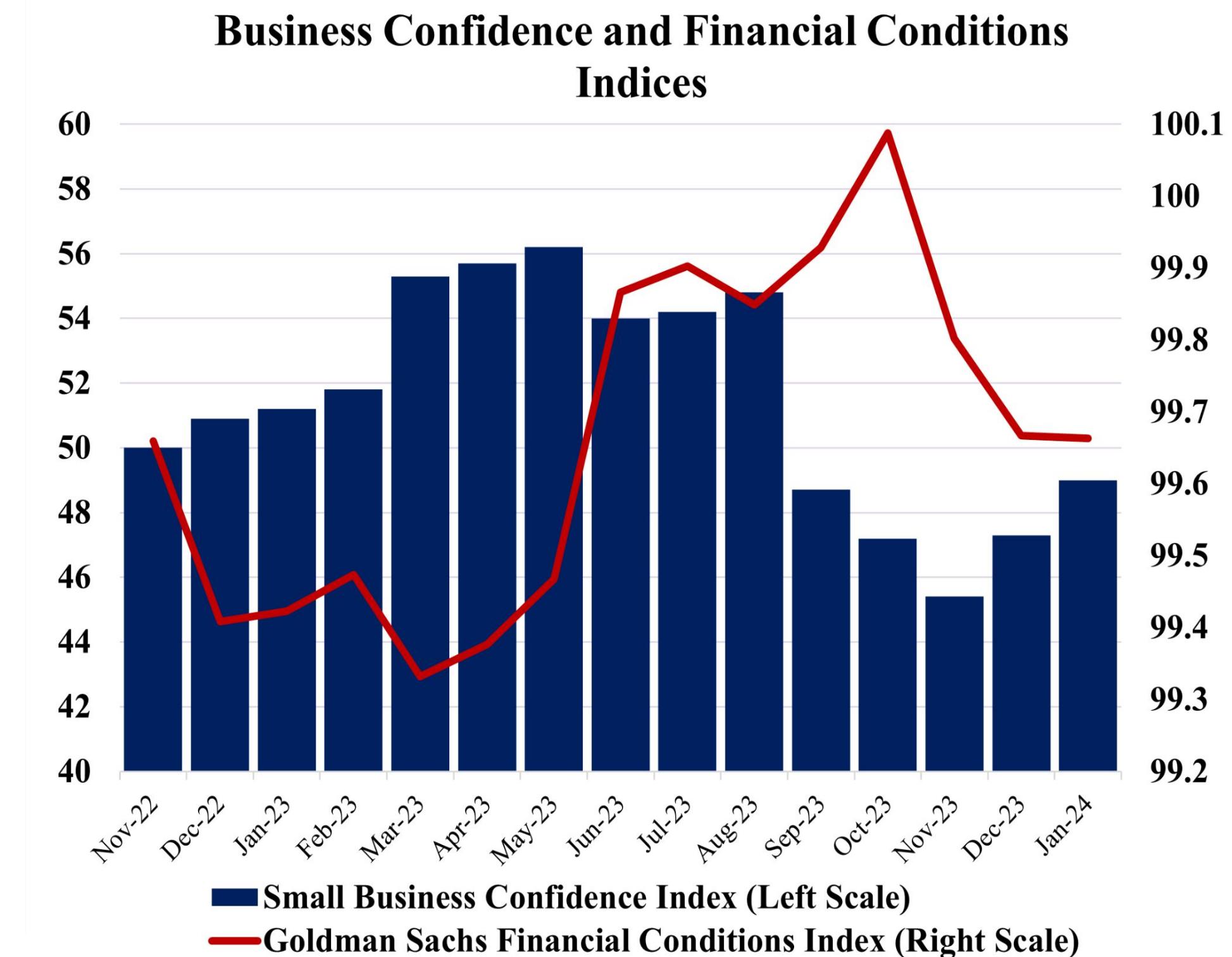
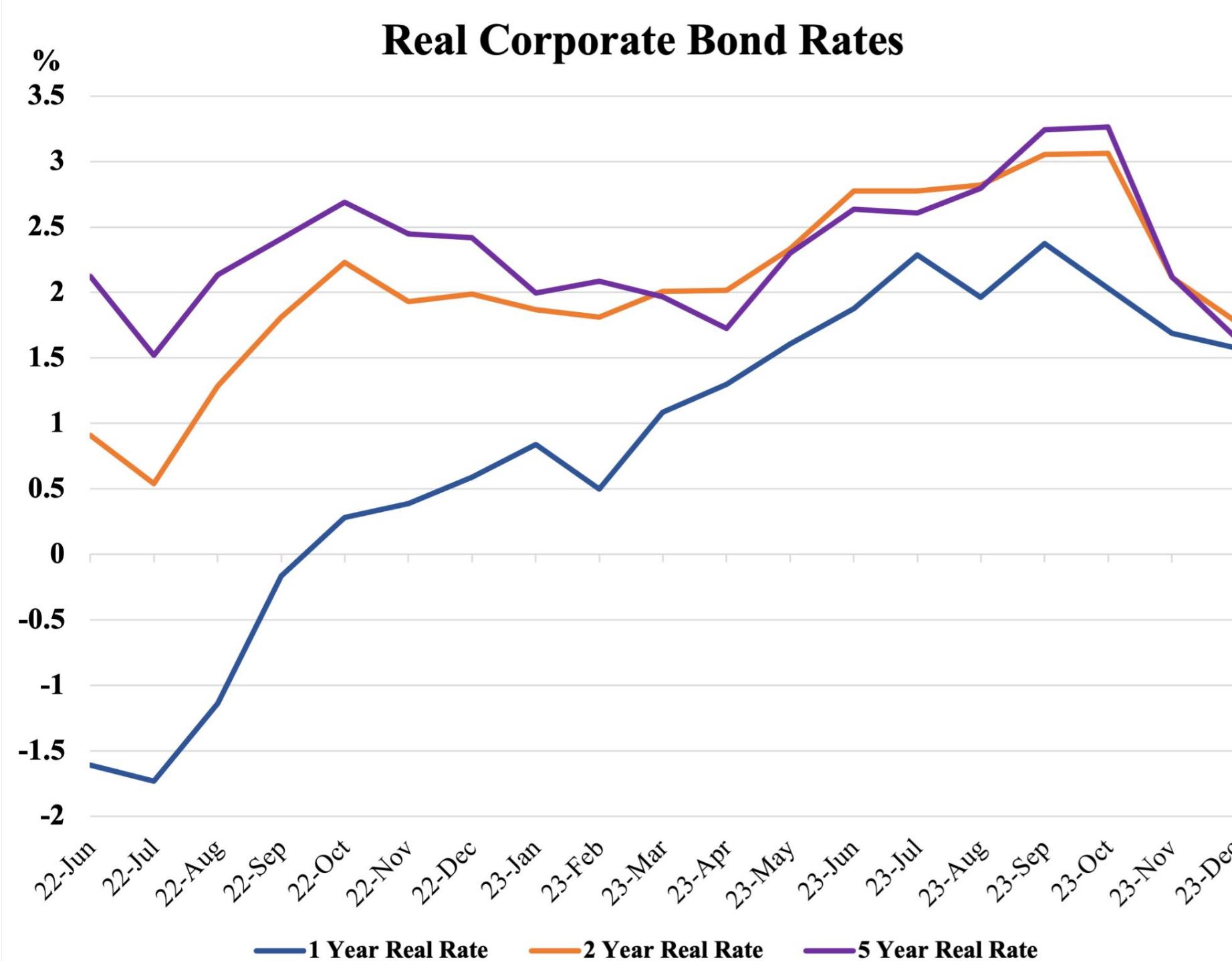
Average Consumer Balance			
Loan Type	Q3 2022	Q3 2023	Yearly % Change
Credit Cards	\$3,913	\$4,265	+9.00%
Mortgages	\$343,612	\$356,848	+3.85%
Auto Loans	\$26,082	\$27,680	+6.13%
Installment Loans	\$20,938	\$21,612	+3.22%



Source: TransUnion Credit Industry Insights Report

Source: The Conference Board of Canada, Statistics Canada; Note: the red curve is unadjusted for seasonality.

Financial Conditions Loosen as Small Businesses' Confidence Increases

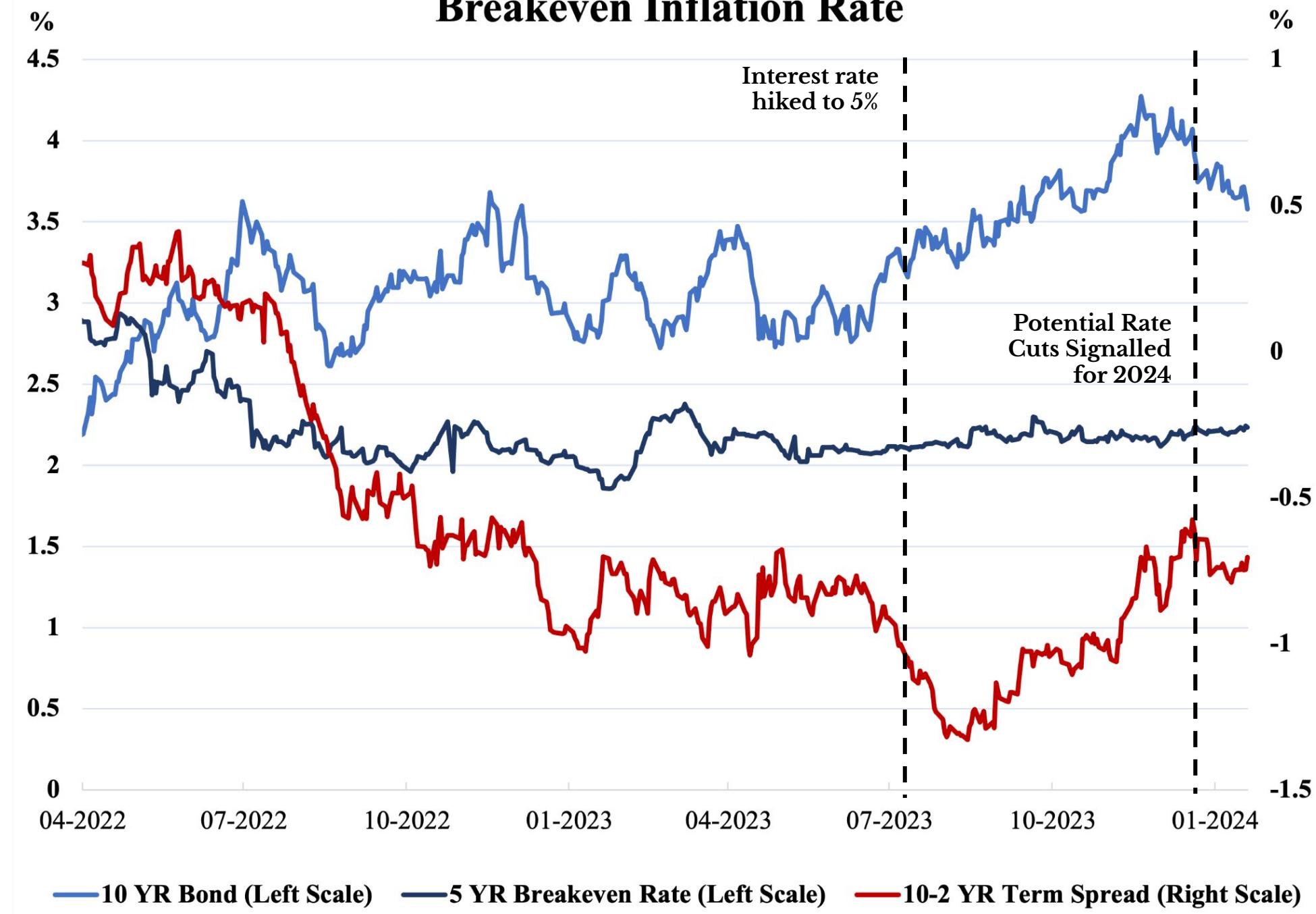


Source: Business Outlook Survey, Refinitiv, Author's Calculations (implied real corporate interest rates are calculated by subtracting business inflation expectations from AA rated corporate bond yields of the same term).

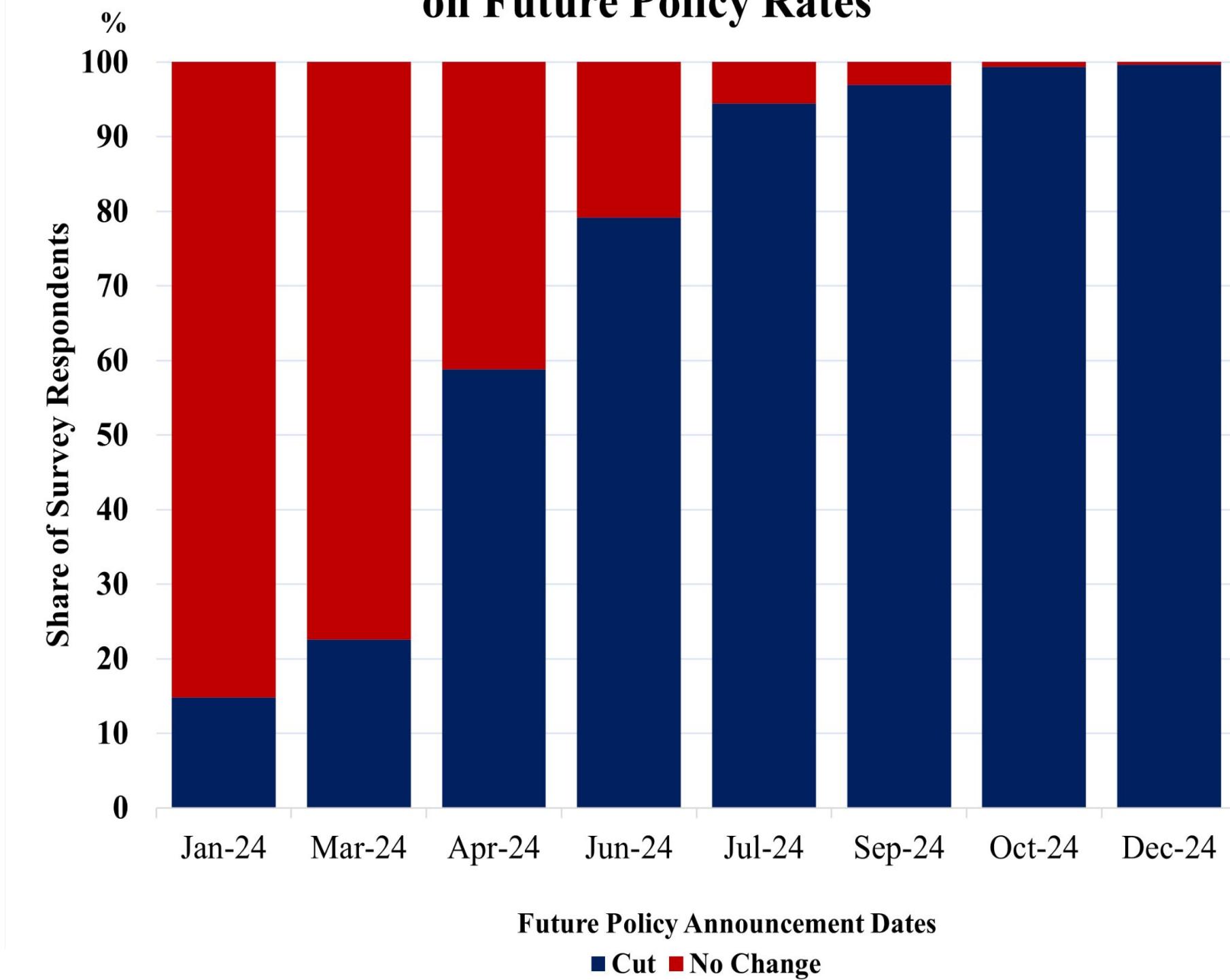
Source: Bloomberg, Canadian Federation of Independent Business. The Goldman Sachs FCI calculates the weighted average of riskless interest rates, equity valuations, exchange rate fluctuations, and credit spreads, (where the weights correspond to the direct impact of each variable on GDP).

Long Term Rates Gradually Decline as Investors Expect Rate Cuts in 2024

10 Year Government Bond Yield, Term Spread, and Breakeven Inflation Rate



Overnight Interest Swap Market Expectations on Future Policy Rates



Source: Refinitiv, Statistics Canada, Authors Calculations (Government Bond Term Spread is calculated as the 10 year government bond yield less the 2 year government bond yield)

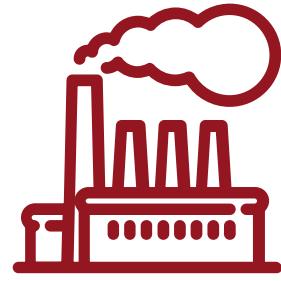
Source: Refinitiv; Shown are the calculated probabilities and expected changes for several central bank target interest rates, implied from the market prices of interest rate derivatives.

Forecast Model Description

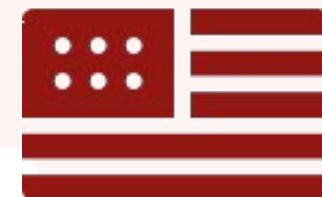
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Conditional VAR Forecasts

Exogenous to Canada



WTI



US GDP

Endogenous



Target Rate



Hourly Wages



Inflation
Expectations



Inflation



GDP



Unemployment

----- Base Case -----

VAR
(3)

Monthly
GDP
Inflation
Unemployment
Wage

Estimation Period:
Jan 2001 - Oct 2023

Lag Selection:
Minimized AIC

VAR
(1)

Quarterly
Investment
Consumption
Imports
Exports

Risk Scenarios

Log Linearized DSGE Model

NKPC SOE Assumptions



Utility Maximizing Households



Profit Maximizing Firms



Interest Rate Rule Followed



Nominal Price Rigidities



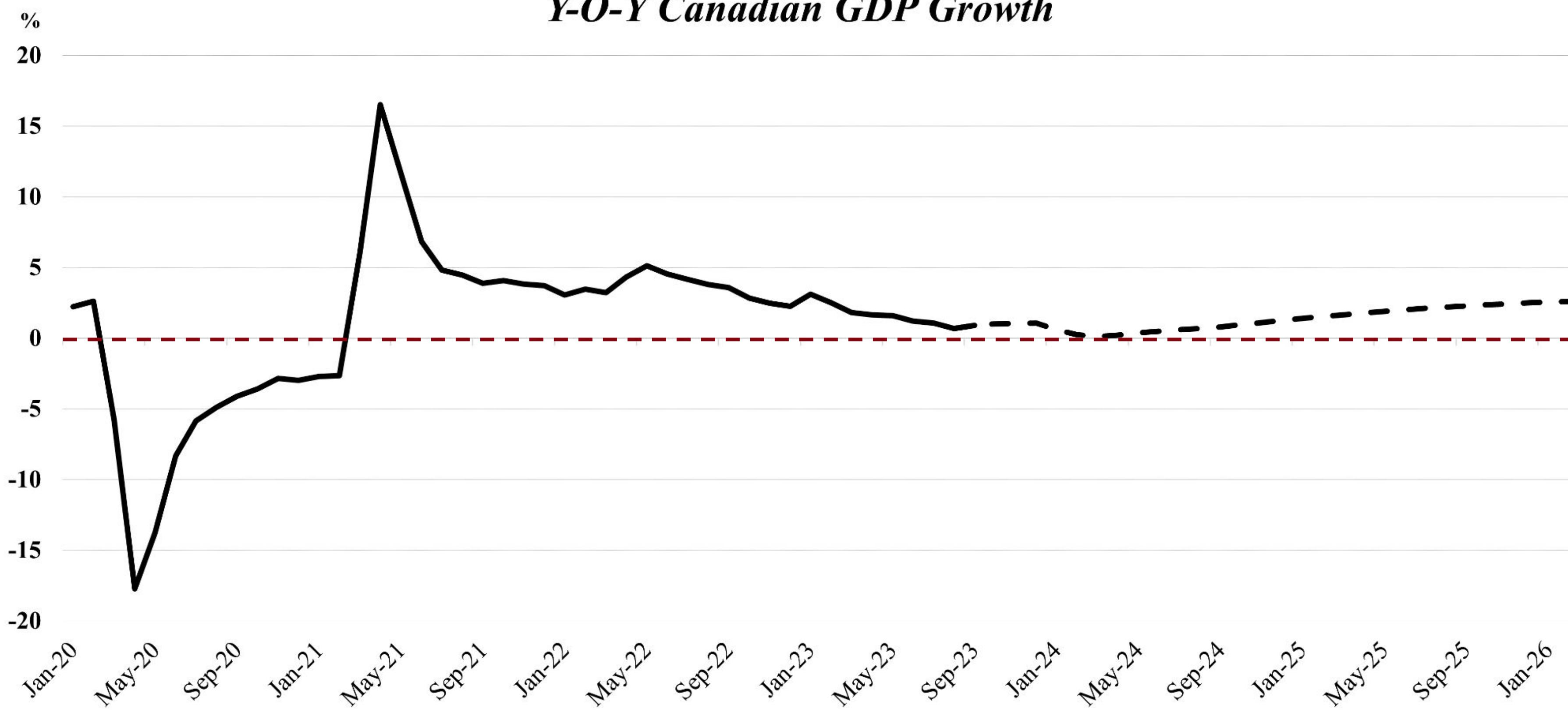
Endogenous Real Exchange Rate



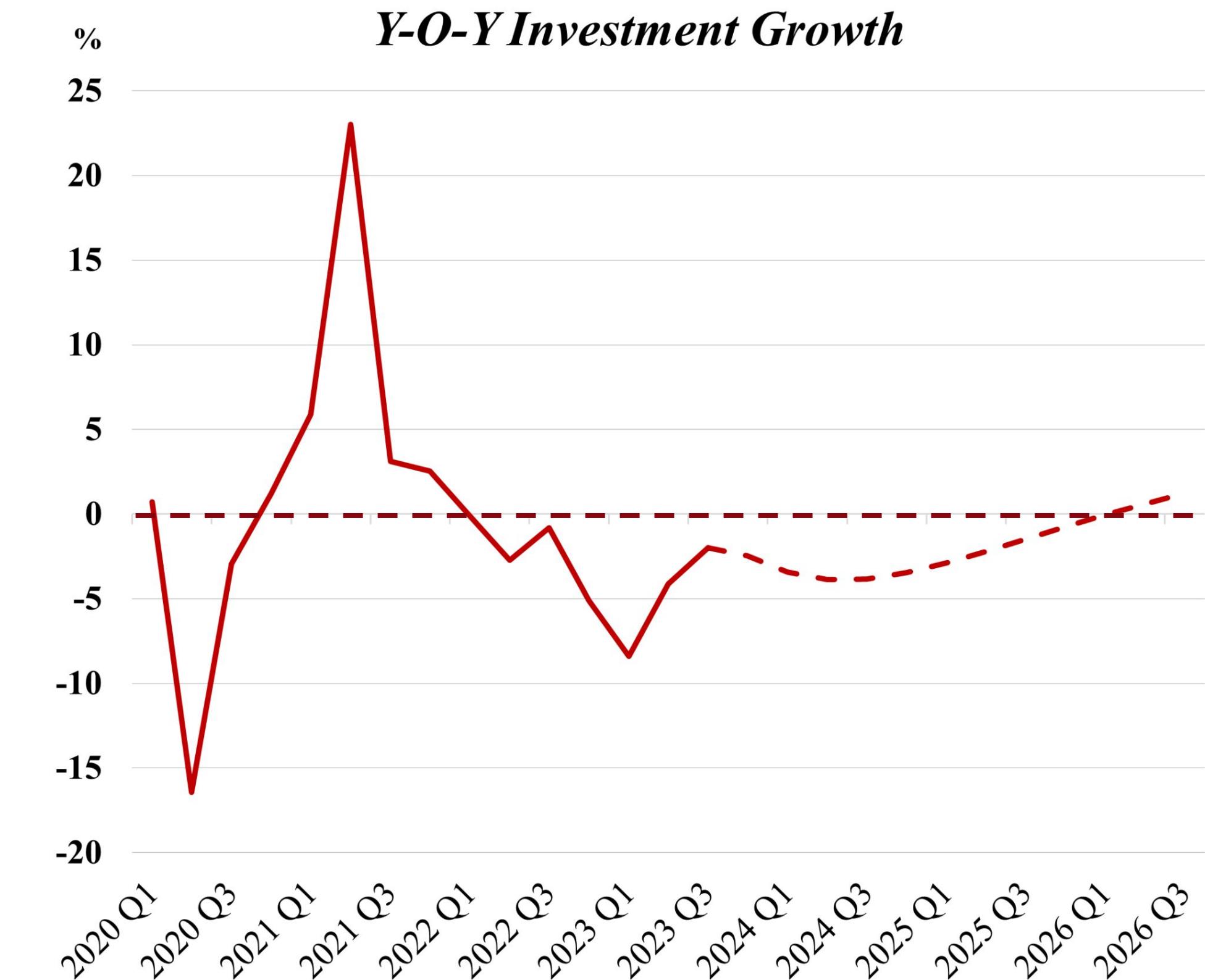
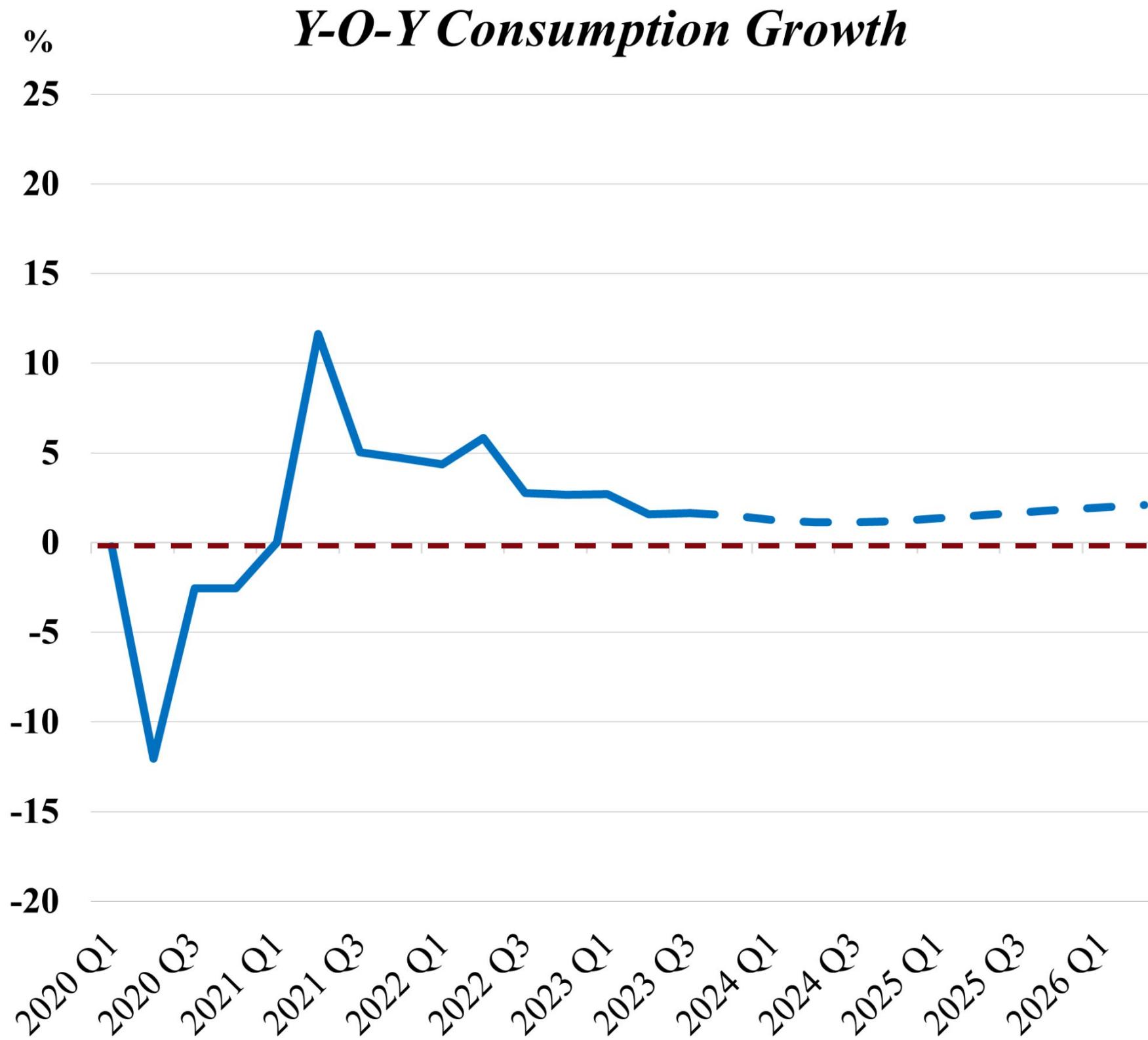
Berg et al., 2006

Modest Economic Growth Expected

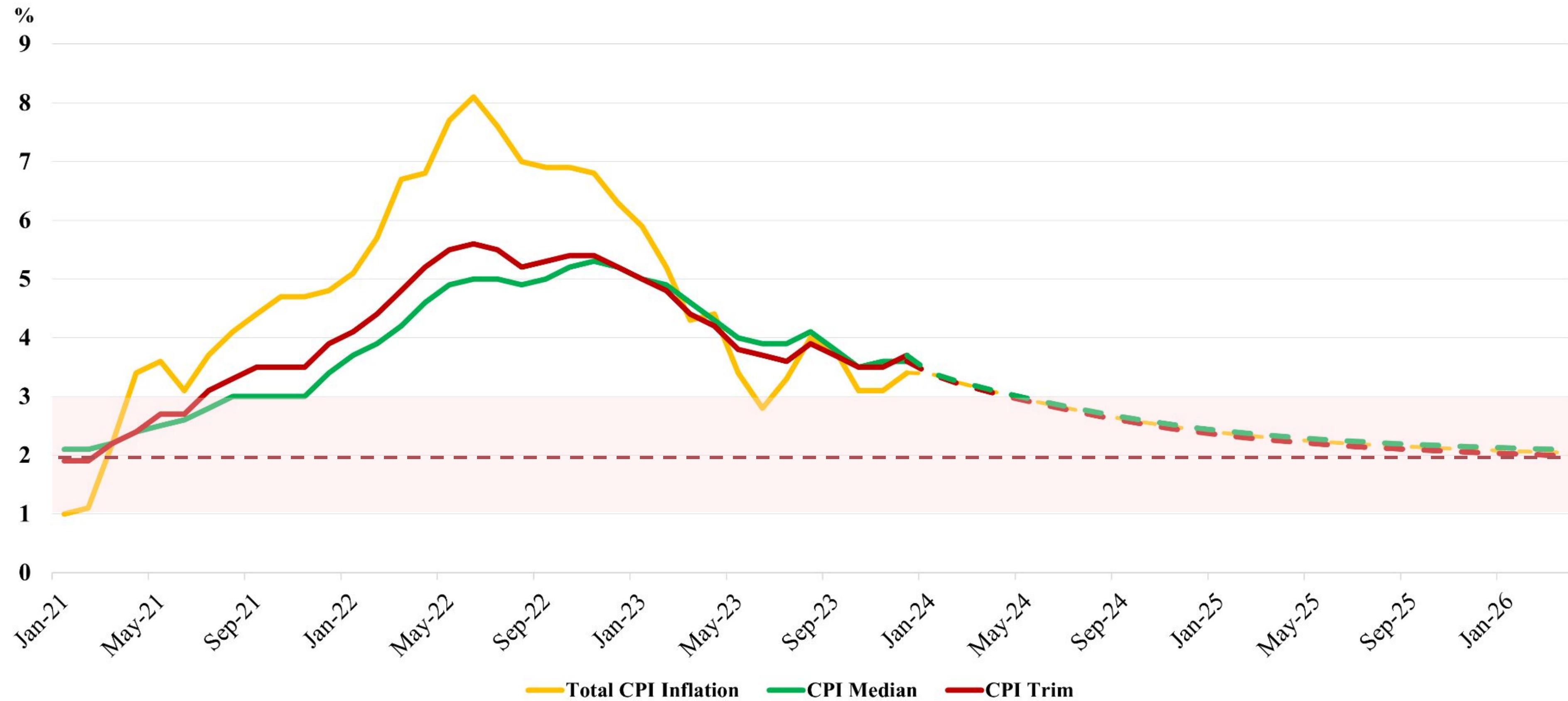
Y-O-Y Canadian GDP Growth



Consumption & Investment to Maintain Steady Recovery



Inflation Returns to Target by 2026



Policy Recommendation

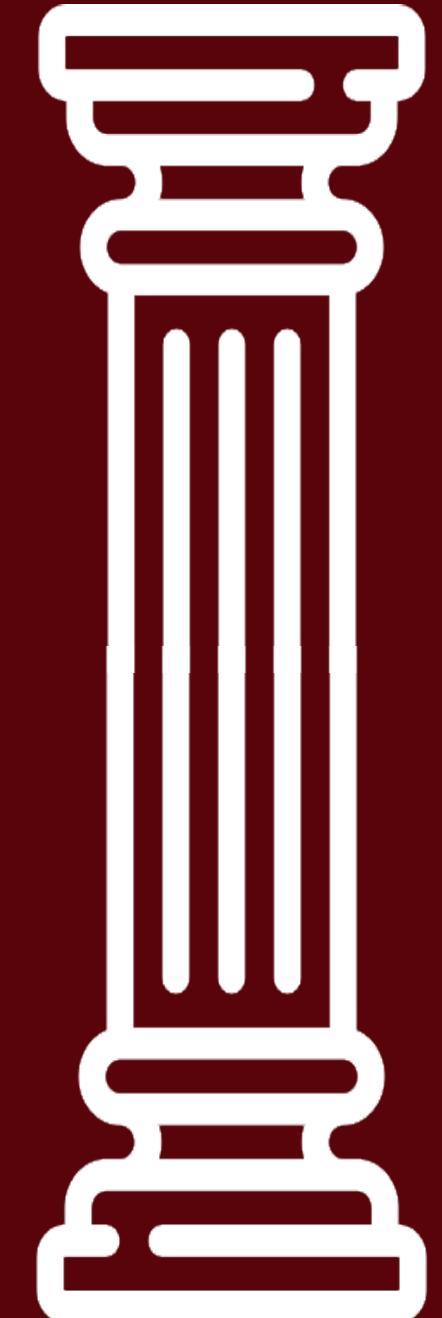
Key Proposal

Hold overnight interest rate target at
5% until Q2 2024

Consider lowering rate in
Q3 2024

Additional Recommendations

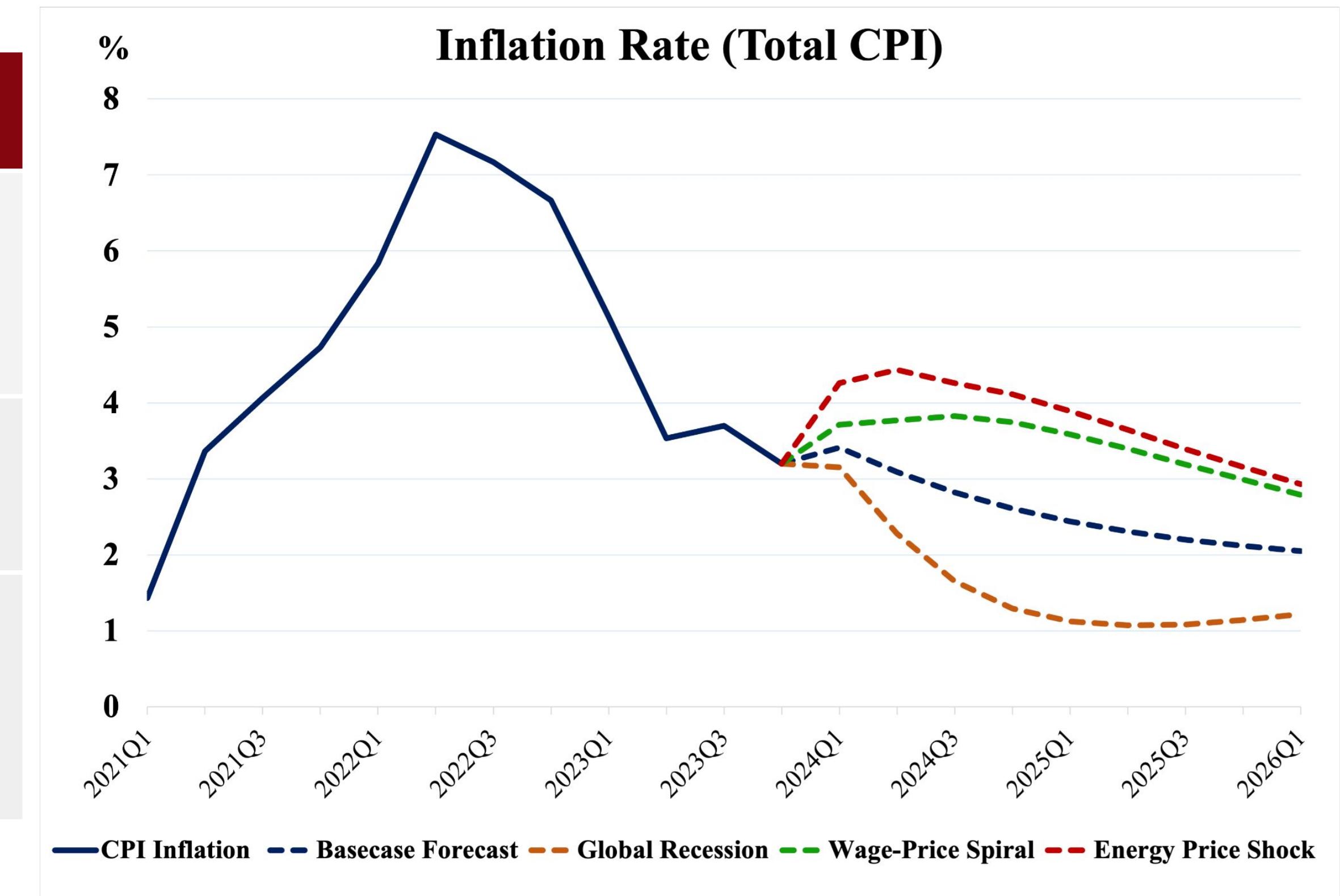
- Data Dependent Policy Adjustment
- Reiterate Commitment to Price Stability
 - Caution to Upside Inflation Risks



05.

Risk Scenarios

Scenario	Main Channels	Policy Response
Wage-Price Spiral	Increase in expected inflation.	Policy Rate Hike.
Energy Price Shock	Adverse supply shock.	Policy Rate Hike.
Global Recession	Decrease in global inflation and global economic growth rate.	Policy Rate Decrease.



Risk Scenarios and Policy Responses

06.

Q & A

07.

Appendix

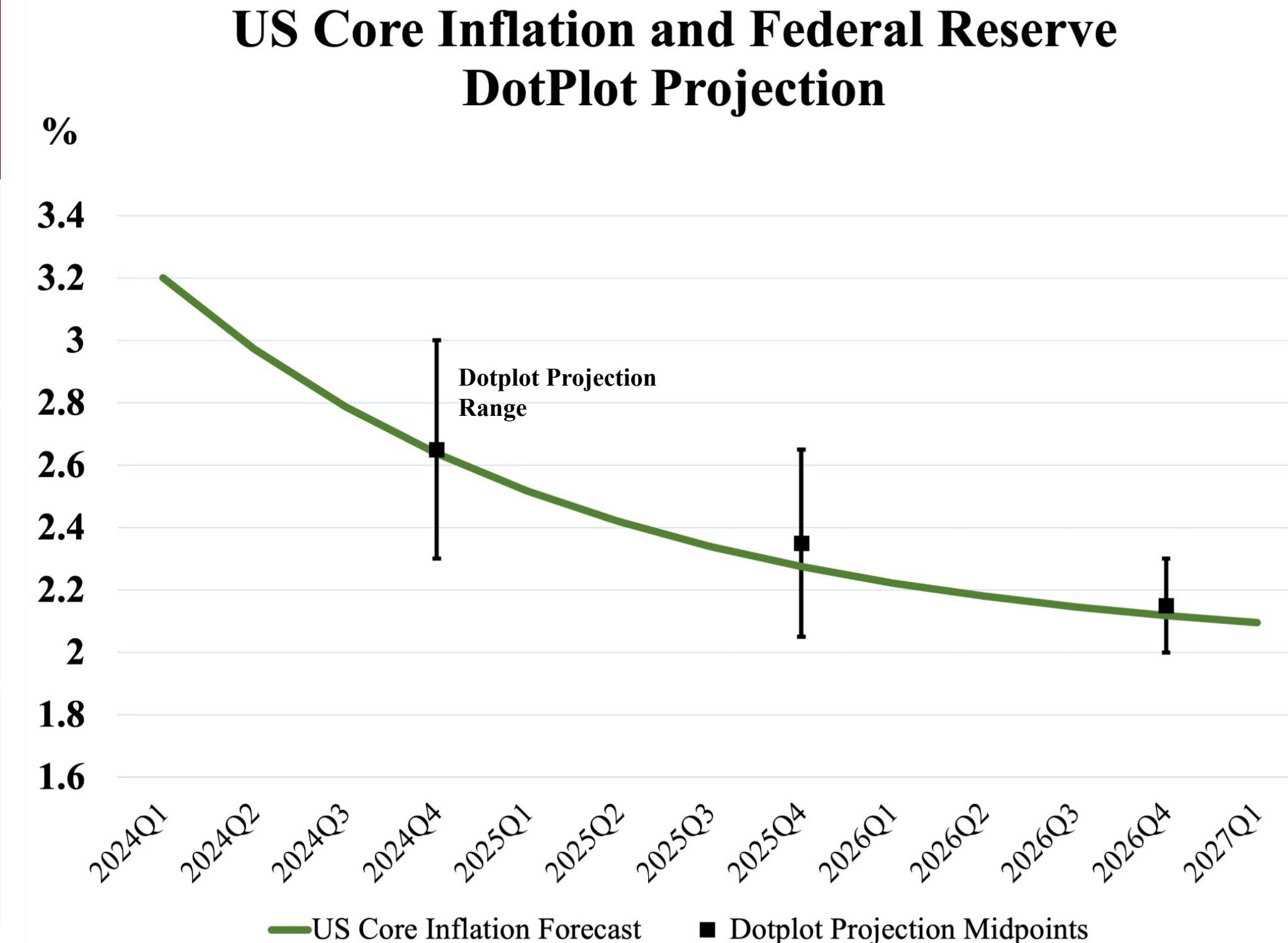
DSGE Model for Risk Scenario Forecasts

Aggregate Supply	$\hat{\pi}_t = 0.99\{0.5 * E_t[\hat{\pi}_{t+1}] + 0.5\hat{\pi}_{t-1}\} + 0.1\hat{y}_t + 0.2 \Delta q_t + u_t$
Aggregate Demand	$\hat{y}_t = 0.11E_t[\hat{y}_{t+1}] + 0.89\hat{y}_{t-1} - 0.3\{R_t - E_t[\pi_{t+1}] - r^*\} + 0.05 \Delta q_t + g_t$
Interest Rate Rule	$R_t = 0.82R_{t-1} + 0.18\{r^* + \pi^T + 2E_t[\hat{\pi}_{t+6}] + 0.5\hat{y}_t\} + v_t$
Variable	Description
$\hat{\pi}_t$	Percent deviation of inflation from target, $\pi^T = 2\%$
\hat{y}_t	Percent deviation of output from potential output
Δq_t	$\Delta q_t = \Delta s_t - \pi_t + \pi_t^{US}$ (Percent change in the real exchange rate, positive change means real depreciation)
Δs_t	Quarter over quarter percent change in nominal exchange rate follows an assumed profile
π_t^{US}	US core inflation (follows an AR(1) process calibrated in accordance with FOMC dot-plot forecast)
u_t	Cost-push supply shock
R_t	Policy interest rate, r^* is the neutral real rate = 1%
g_t	Demand shock
v_t	Interest rate shock

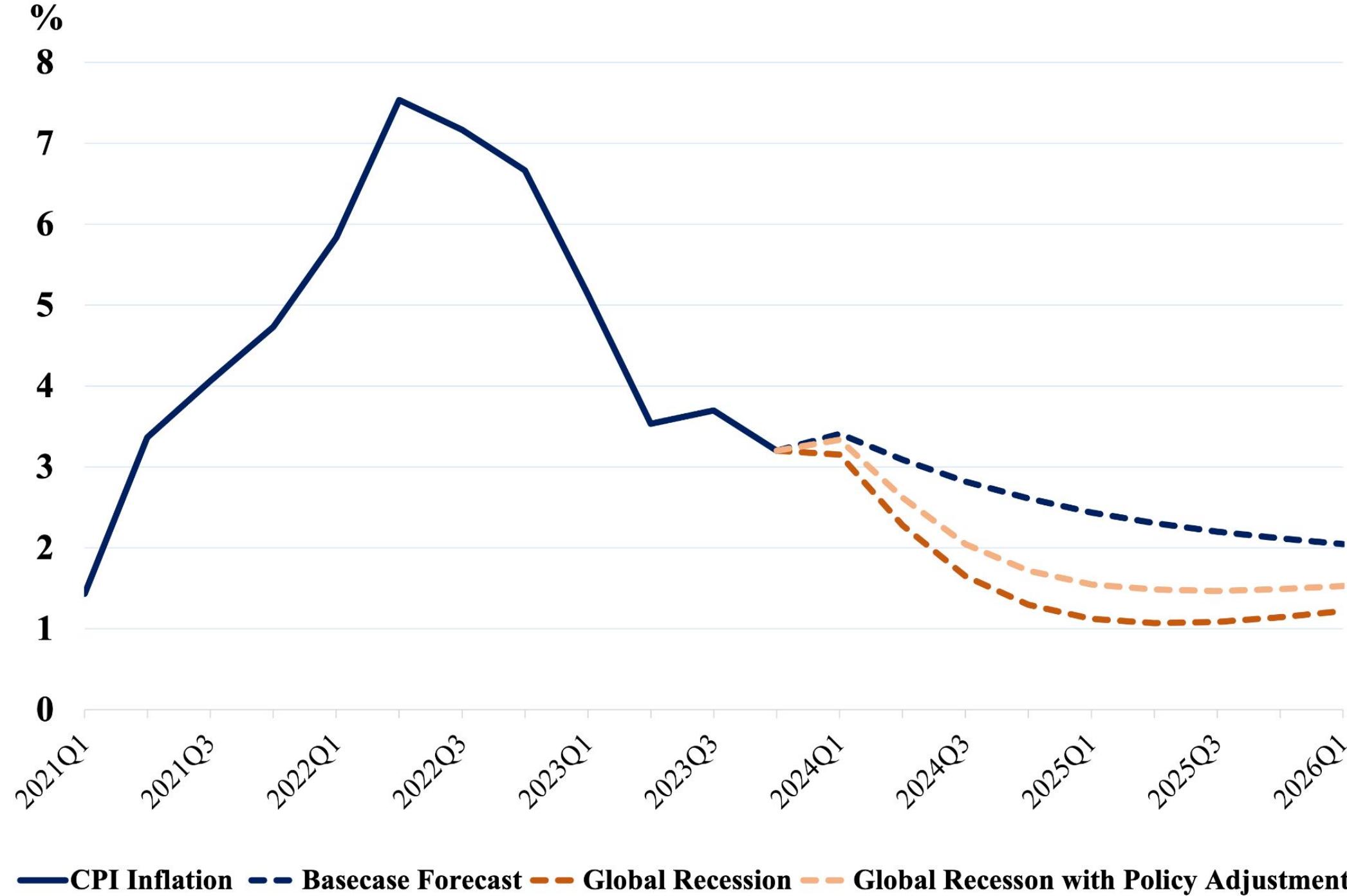
DSGE Model for Risk Scenario Forecast Key Assumptions

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Model Element	Key Assumption
Nominal Exchange Rate Profile	<ul style="list-style-type: none"> Flat over the forecast horizon ($\Delta s=0$) Modified for risk scenarios
US Core Inflation: π^{US}	<ul style="list-style-type: none"> Generated via an AR(1) process Approximates the Federal Reserve dot plot projection
All Parameters	<ul style="list-style-type: none"> Calibrated to match the second moments of inflation, output gap and interest rates



Source: Federal Reserve; the dotplot projections are acquired through the Federal Reserve's Summary of Economic Projections (released in December, 2023).



Policy Adjustment

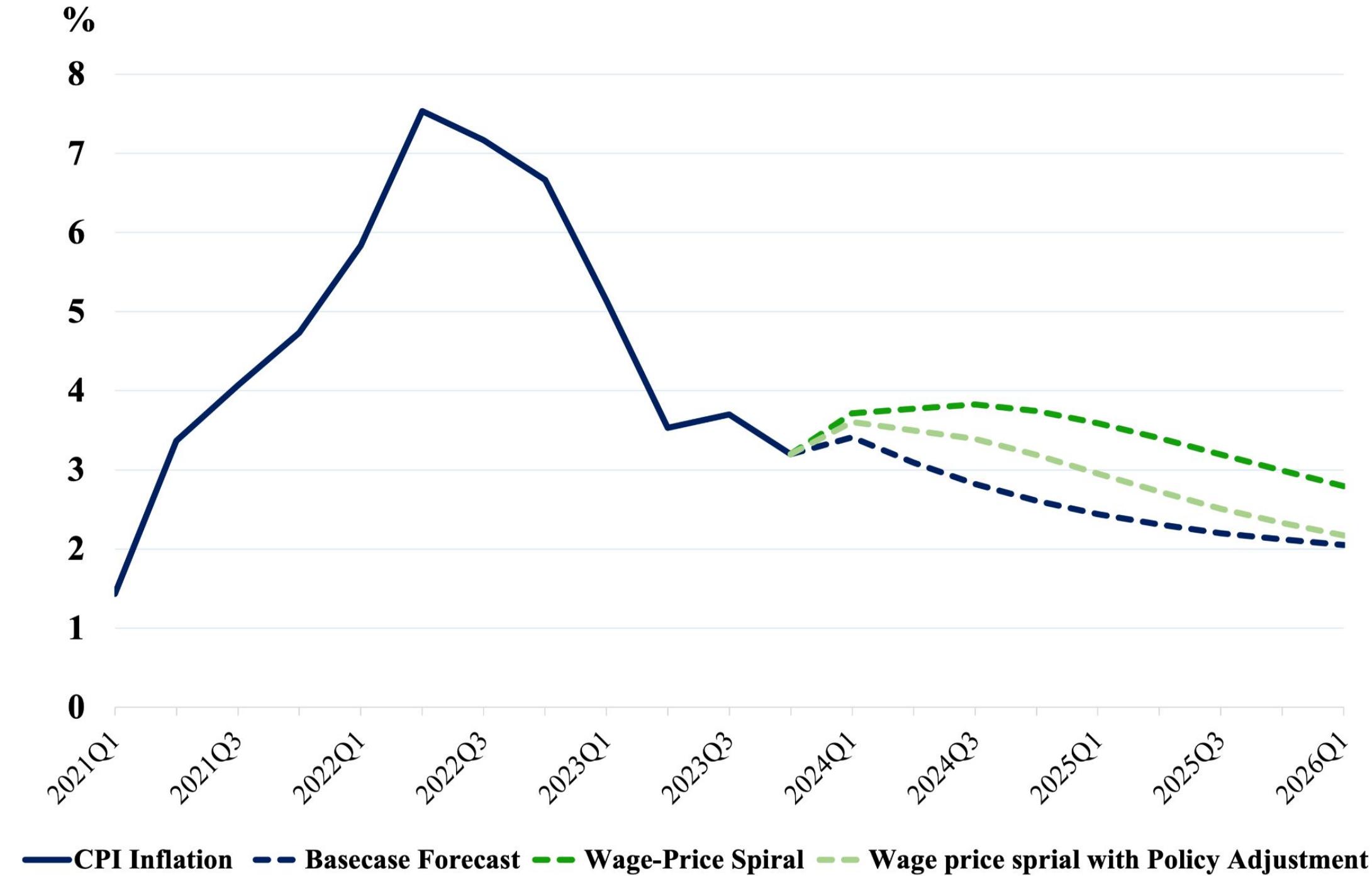
Cut to 3% in March, 2024, cut to 2.5% in June, and hold at 2.5% until September, 2024.

Risk Factor	Exogenous Variable Shocks	Quarterly Percent Change		
		2023Q4	2024Q1	2024Q2
Global Recession	Demand Shock	-1	-0.5	-0.125
	US Inflation	-1	-0.5	-0.125
	Expected Inflation	-1	-0.5	-0.125
	Nominal Exchange Rate	0.5	0.25	0.125

Global Recession

Policy Adjustment

Raise to 5.25% in March, 2024, hold at 5.25% until June, and cut to 5% in September, 2024.

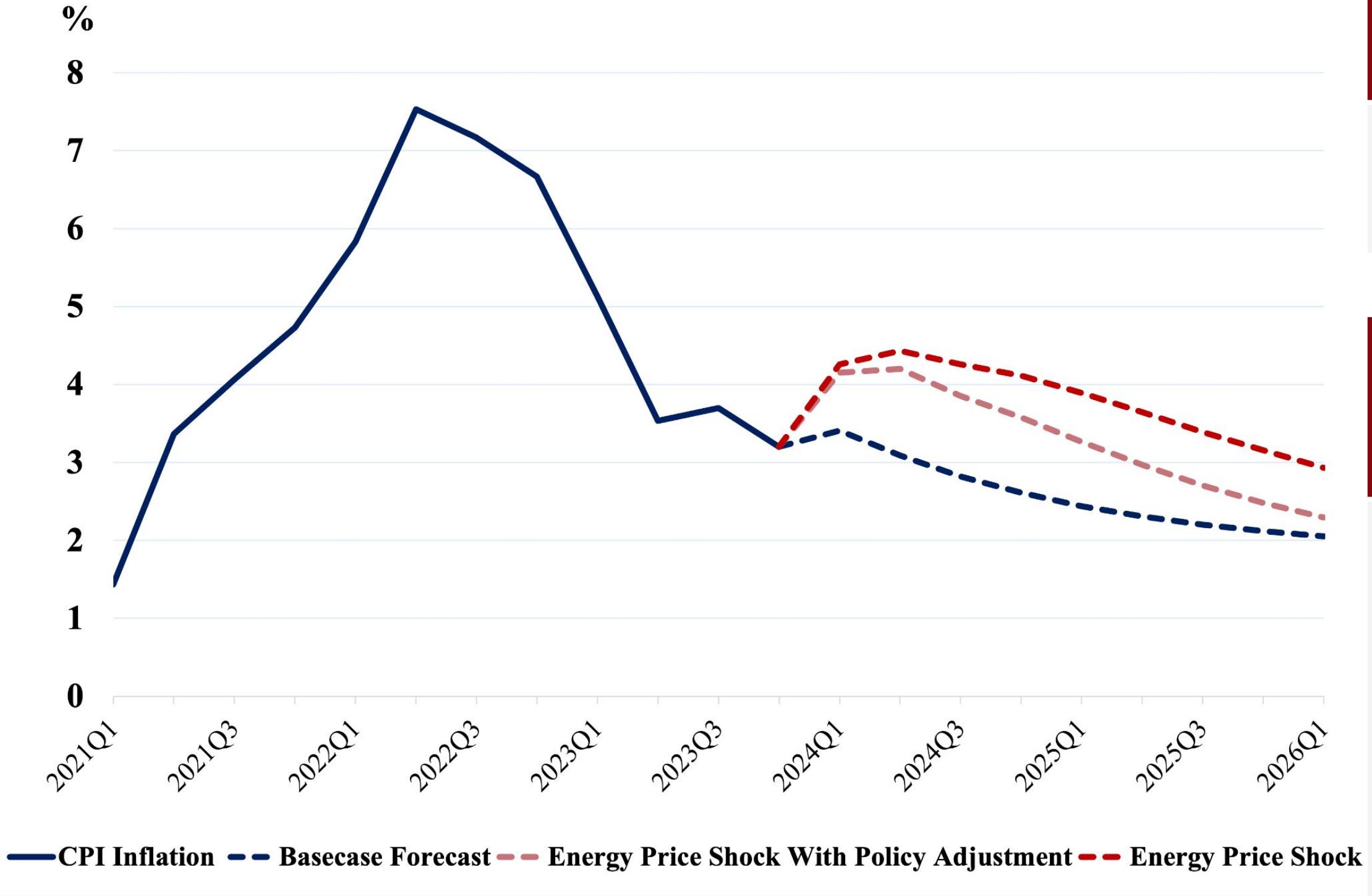


Risk Factor	Exogenous Variable Shocks	Quarterly Percent Change		
		2023Q4	2024Q1	2024Q2
Wage Price Spiral	Expected Inflation	4	3	2

Wage Price Spiral

Policy Adjustment

Raise to 5.25% in December, 2023, cut to 5% by March, and hold at 5% until June, 2024.



Risk Factor	Exogenous Variable Shocks	Quarterly Percent Change		
		2023Q4	2024Q1	2024Q2
Energy Price Shock	Expected Inflation	1.25	0.75	0.25
	Cost-push Supply Shock	1	0.5	0.25
	US Inflation	1	0.5	0.25
	Nominal Exchange Rate	-0.75	-0.5	-0.25

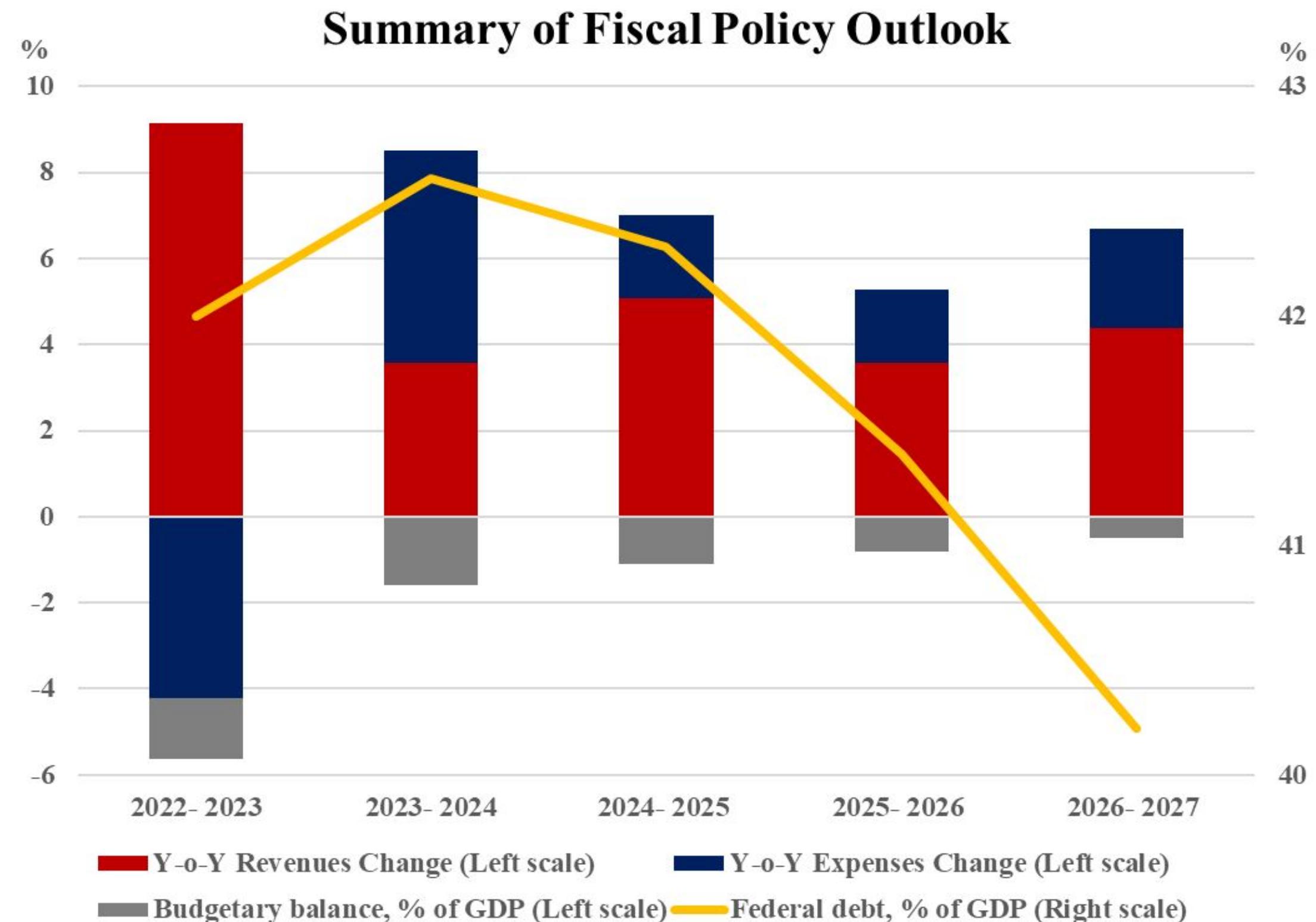
Energy Price Shock

CPI Basket Components and Persistence

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First Order Correlation Coefficient of CPI Components Pre and Post-Pandemic			Δ in Persistence
8 Major Components	Pre-Pandemic	Post-Pandemic	
Food	0.0296	0.5847	Increased
Shelter	0.0091	0.4915	Increased
Transportation	0.0643	0.4218	Increased
Clothing and Footwear	0.3258	0.3294	Similar
Household Operations	0.3795	0.0440	Decreased
Health and Personal Care	0.3748	0.2528	Decreased
Recreation and Education	0.4537	0.0021	Decreased
Alcoholic Beverages and Tobacco Products	0.2640	0.1751	Decreased

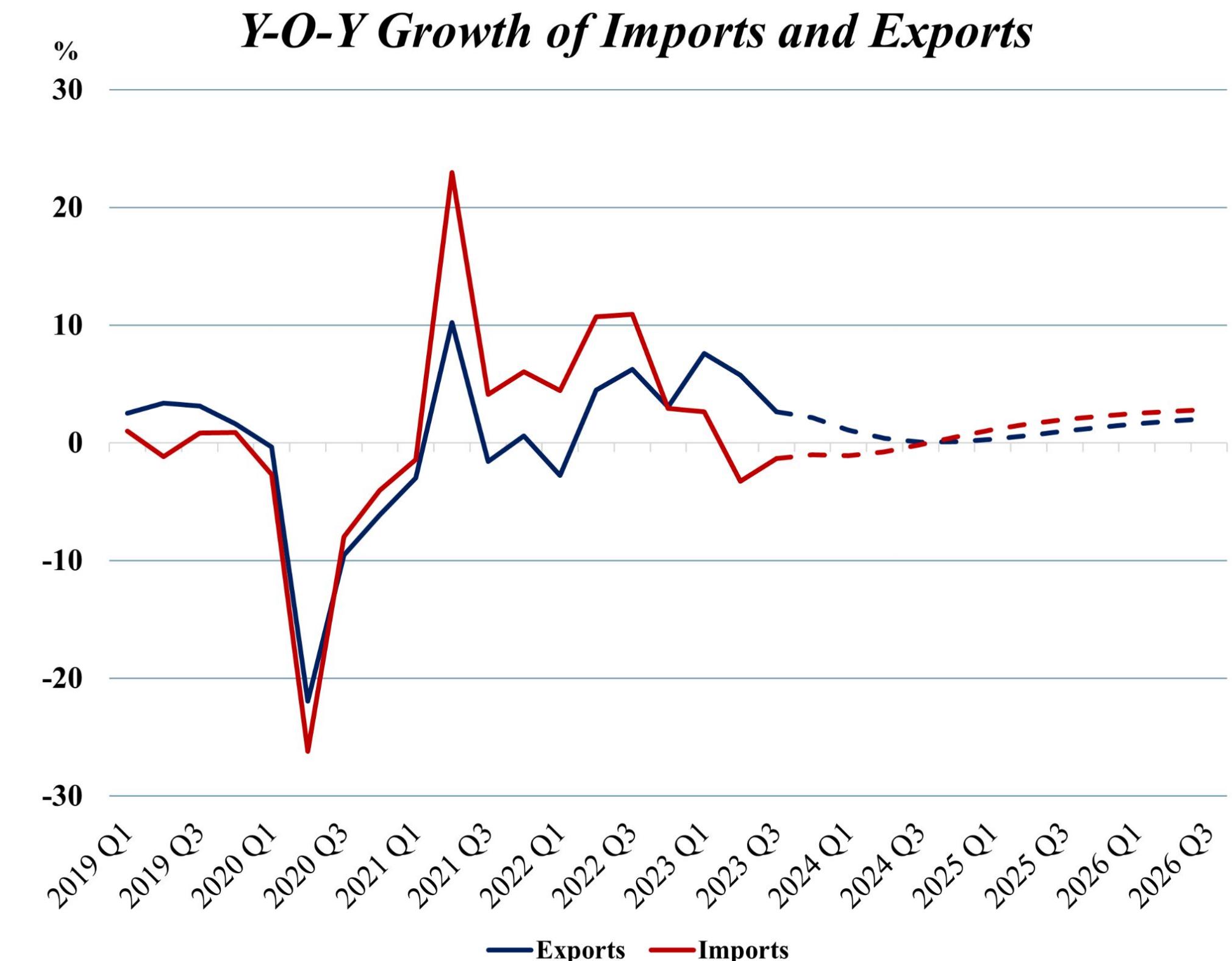
Summary of Fiscal Policy Outlook



Trade Balance Expected to Deteriorate Near End of 2024

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Year to Date Growth of Canada's Main Trading Partners		
Country	Exports	Imports
United States	-2.8%	4.2%
China	17.1%	-15.9%
Japan	-10.1%	15.2%
European Union	-1.7%	11.2%
United Kingdom	-31.5%	14.0%
Mexico	2.0%	18.2%
Trade Weighted Average	-1.79%	2.79%



Source: Office of the Chief Economist, World Bank, Author's Calculations;

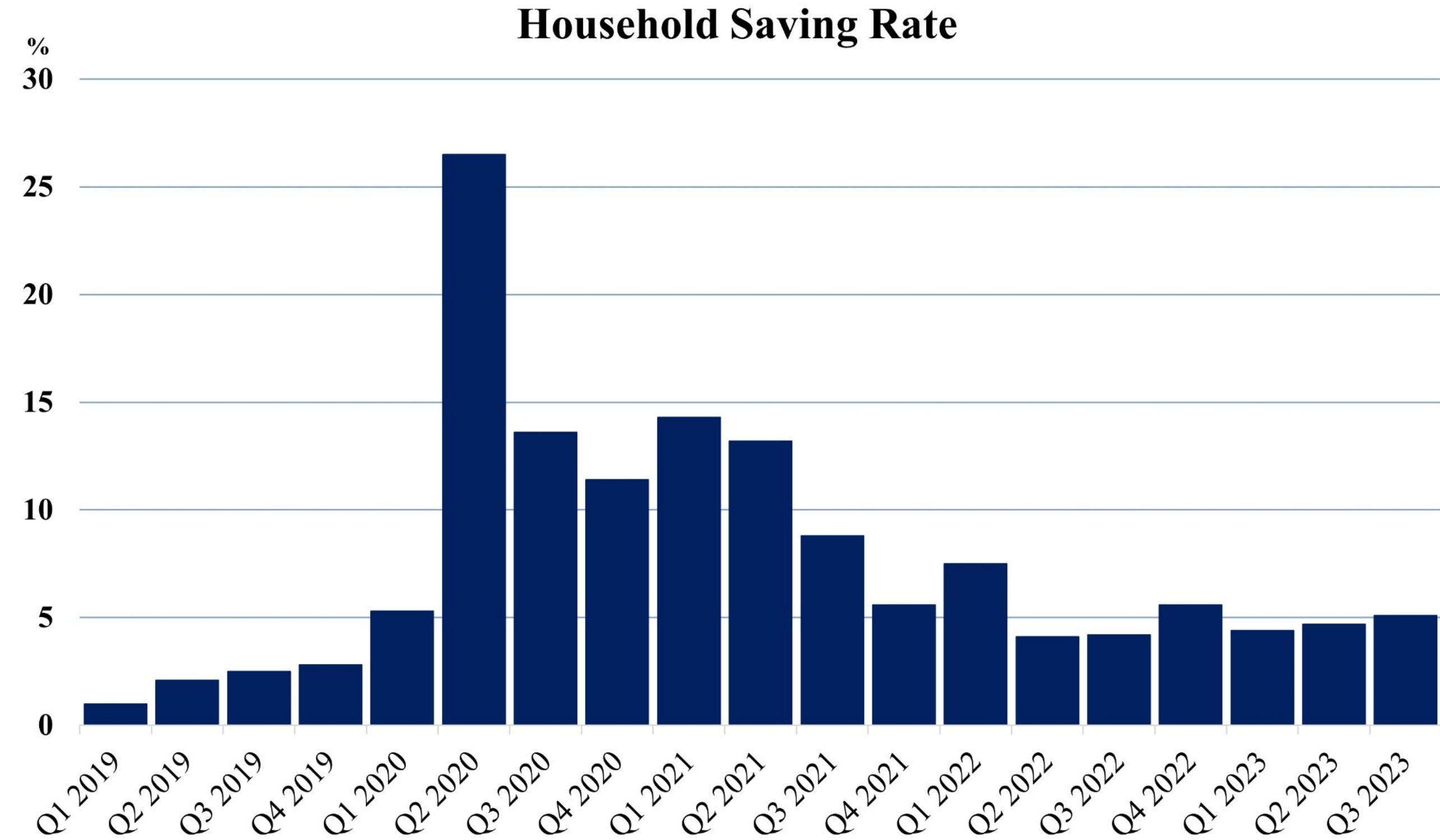
Source: Statistics Canada, Author's Calculations

Correlation Between Inflation Components and Expectations Persistent Across All Incomes

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Component	Time	R^2		
		Under 40K	40K-100K	Over 100K
Food	Pre Pandemic	0.1382	0.037	0.002
	Post Pandemic	0.8878**	0.8879**	0.855**
Shelter	Pre Pandemic	0.098	0.024	0.012
	Post Pandemic	0.800**	0.817**	0.814**
Energy	Pre Pandemic	0.093	0.263	0.191
	Post Pandemic	0.004	0.008	0.012

Household Savings Continue to Deplete Post-Pandemic



Housing Prices Cool As High Interest Rates Persist

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